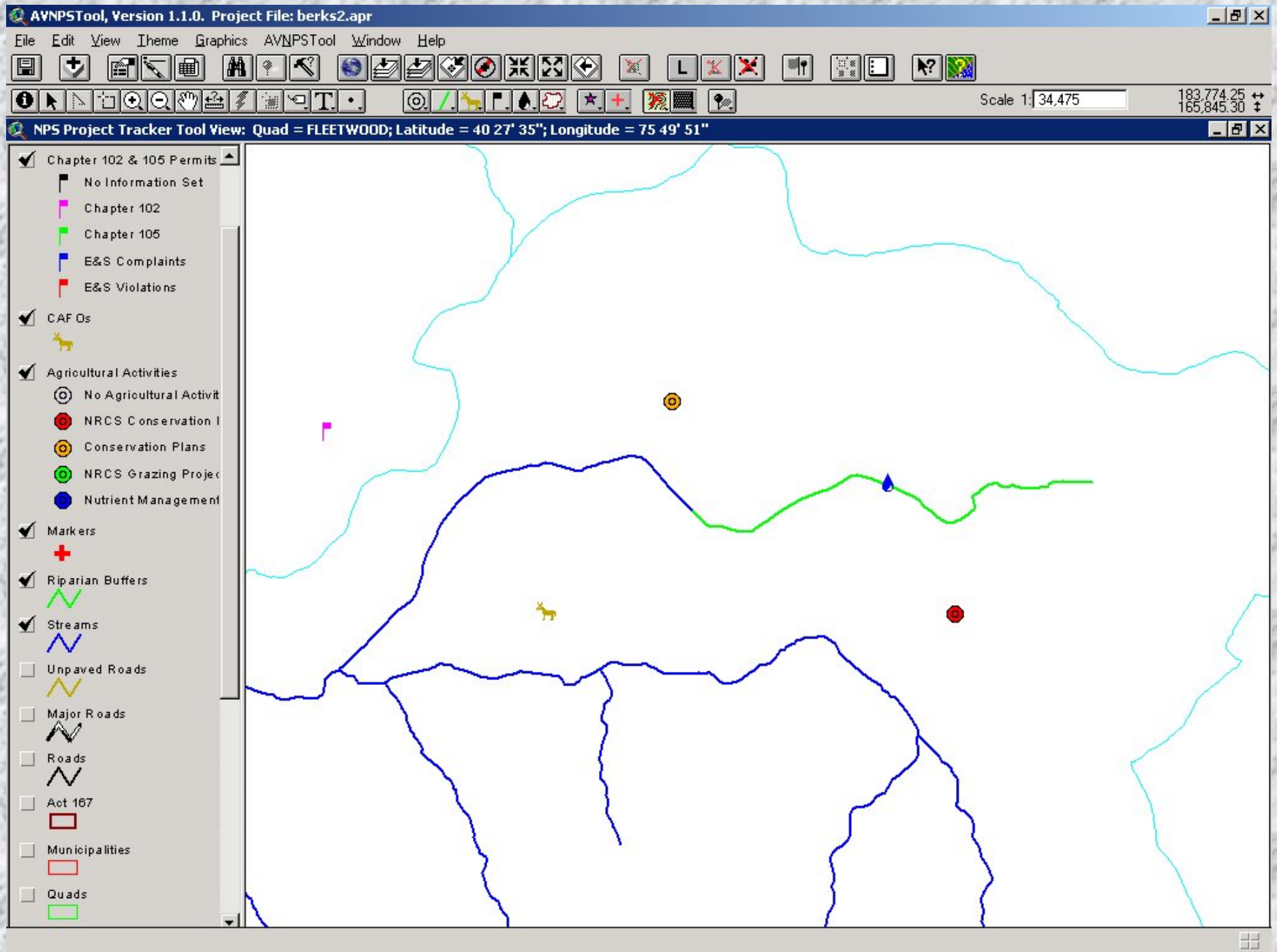
Tracking BMP's in a watershed context

GIS-based NPS Tracking Tool

Presented by Fred Suffian, EPA Mid-Atlantic
Developed by
Penn State Institutes of the Environment
Pennsylvania State University

Principal Tools/Methods

- *Document ongoing pollution-reduction activities in GIS-based application to support above analyses*
- *Use GIS-based watershed simulation model (AVGWLF) to estimate nutrient and sediment loads*
- *Estimate possible pollution reductions based on use of selected BMPs and other pollution mitigation strategies*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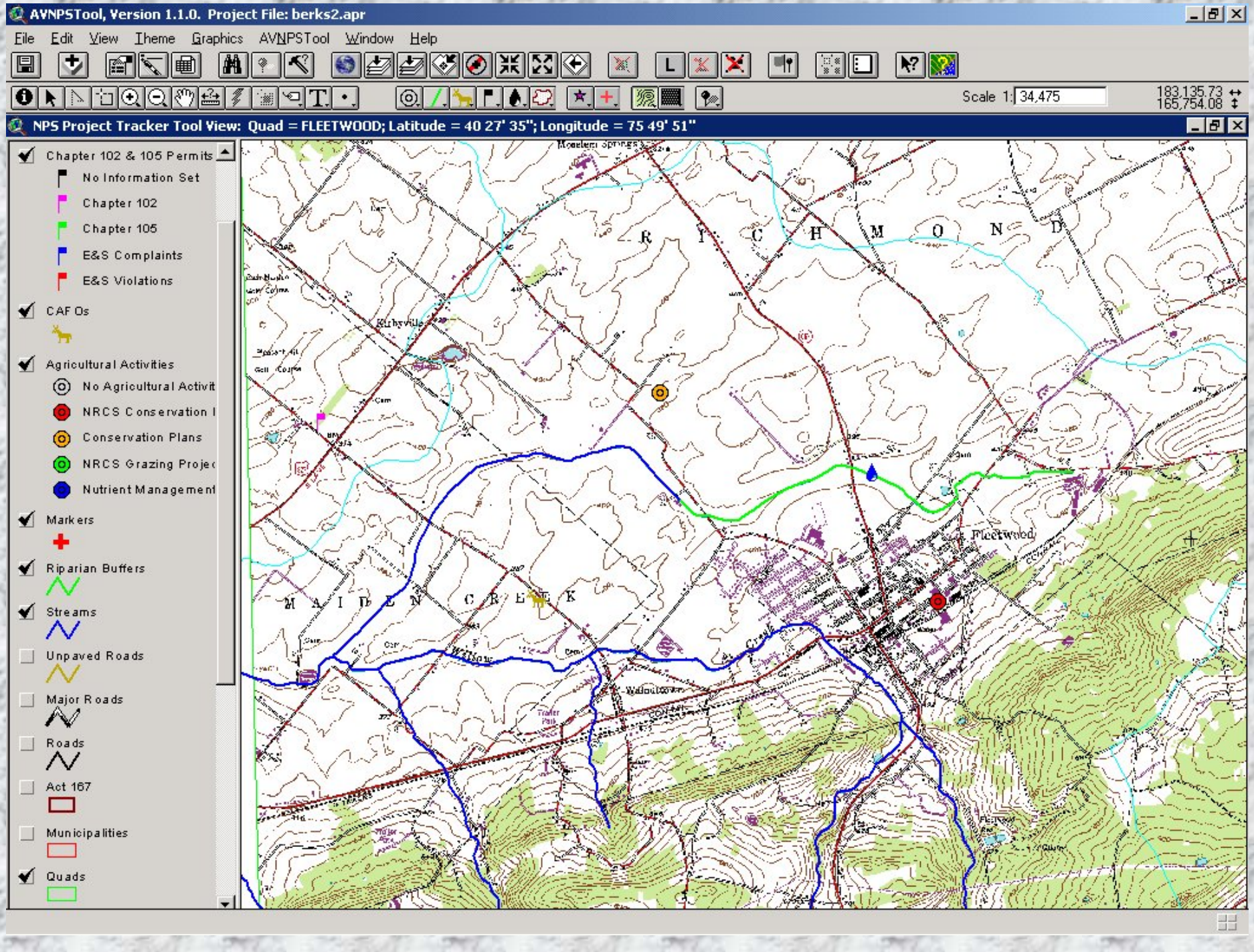
Chapter 102 & 105 Permits
No Information Set
Chapter 102
Chapter 105
E&S Complaints
E&S Violations
CAFOs
Agricultural Activities
No Agricultural Activit
NRCS Conservation I
Conservation Plans
NRCS Grazing Projec
Nutrient Management
Markers
Riparian Buffers
Streams
Unpaved Roads
Major Roads
Roads
Act 167
Municipalities
Quads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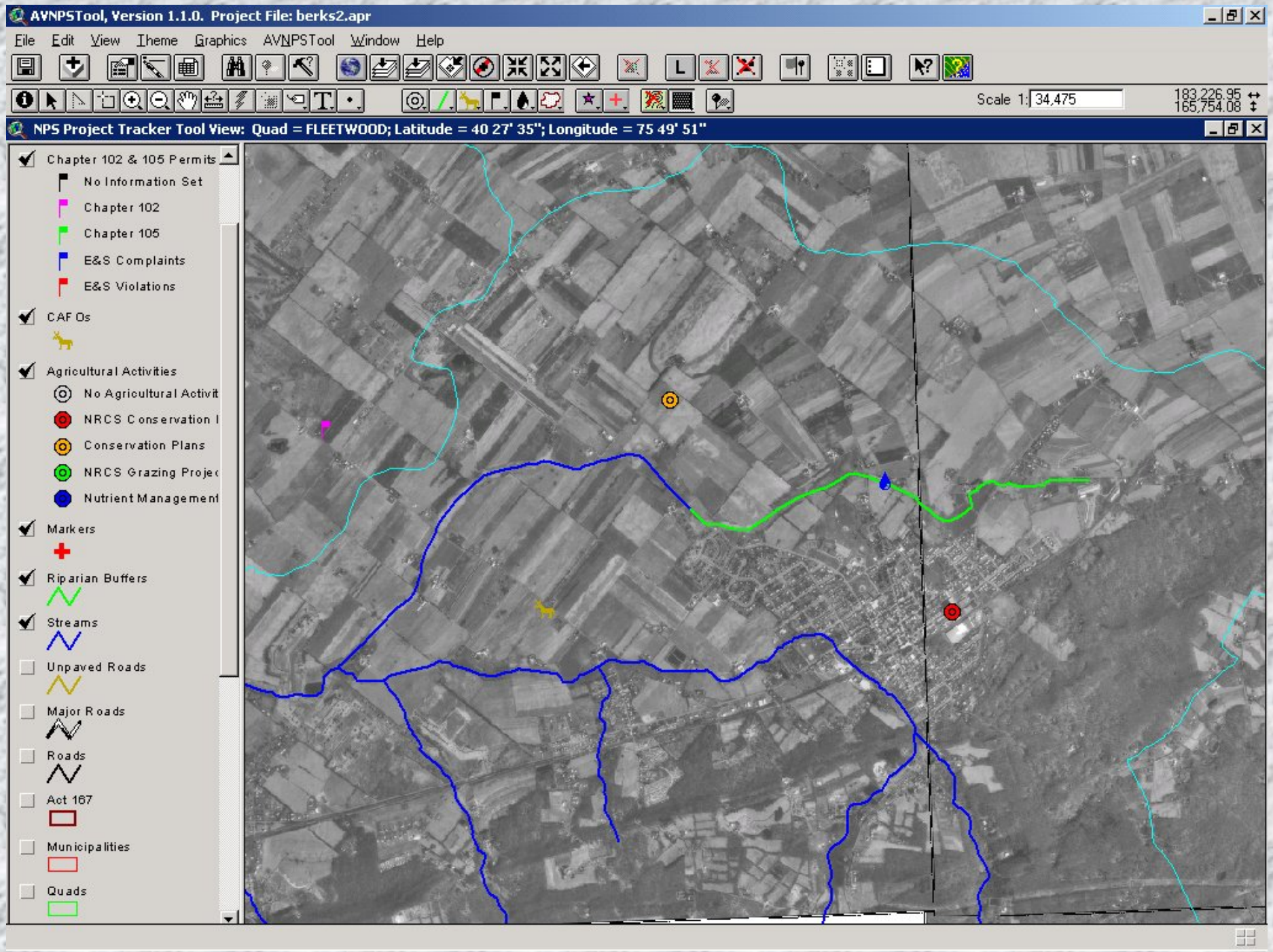
Chapter 102 & 105 Permits
No Information Set
Chapter 102
Chapter 105
E&S Complaints
E&S Violations
CAFOs
Agricultural Activities
No Agricultural Activit
NRCS Conservation I
Conservation Plans
NRCS Grazing Projec
Nutrient Management
Markers
Riparian Buffers
Streams
Unpaved Roads
Major Roads
Roads
Act 167
Municipalities
Quads
R I C H M O N D
M A I D E N C R E E K
Kirbyville
Fleetwood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NPS Project Tracker Tool View: Quad = FLEETWOOD; Latitude = 40 27' 35"; Longitude = 75 49' 51"
Chapter 102 & 105 Permits
No Information Set
Chapter 102
Chapter 105
E&S Complaints
E&S Violations
CAFOs
Agricultural Activities
No Agricultural Activit
NRCS Conservation I
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Nutrient Management
Markers
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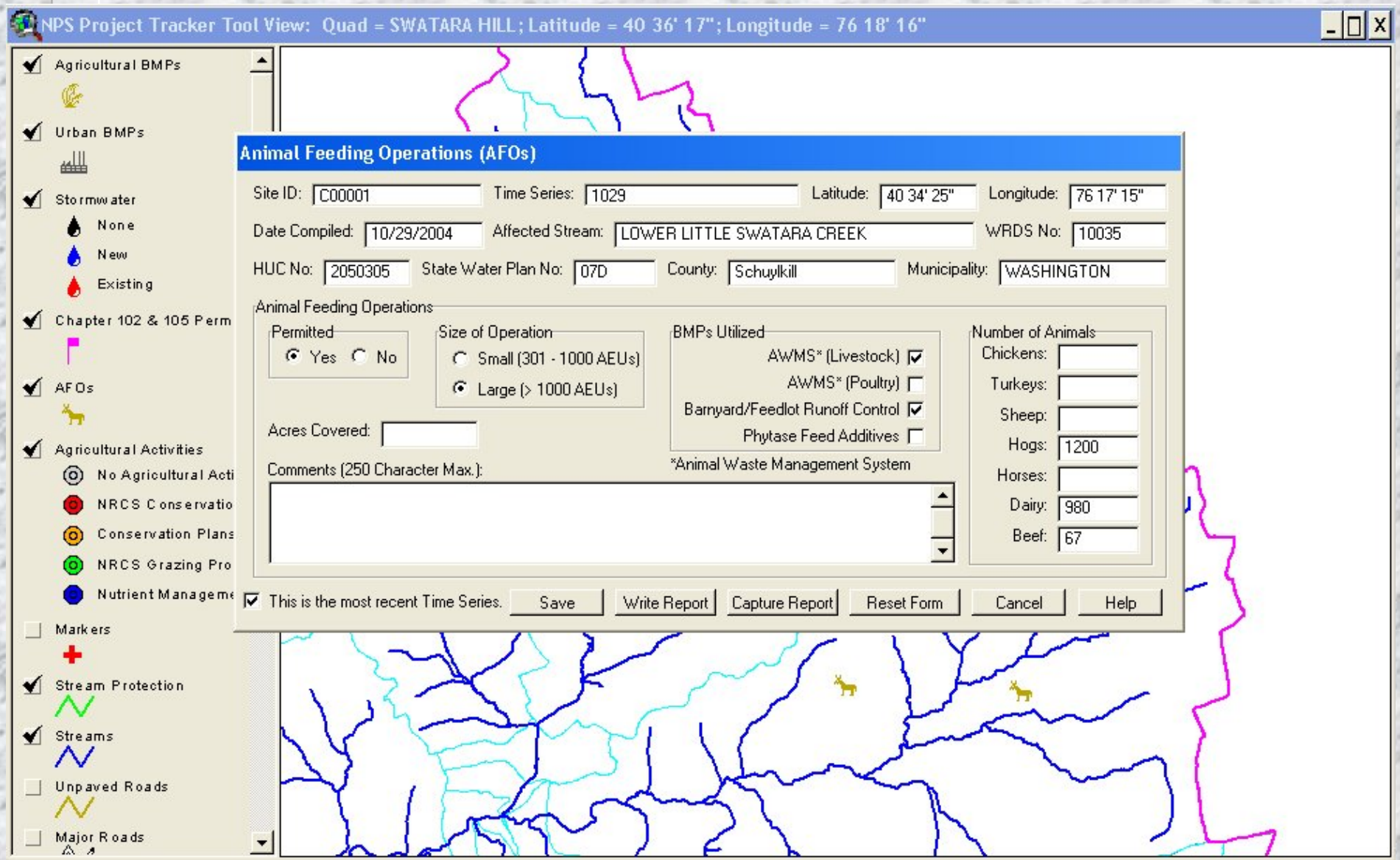
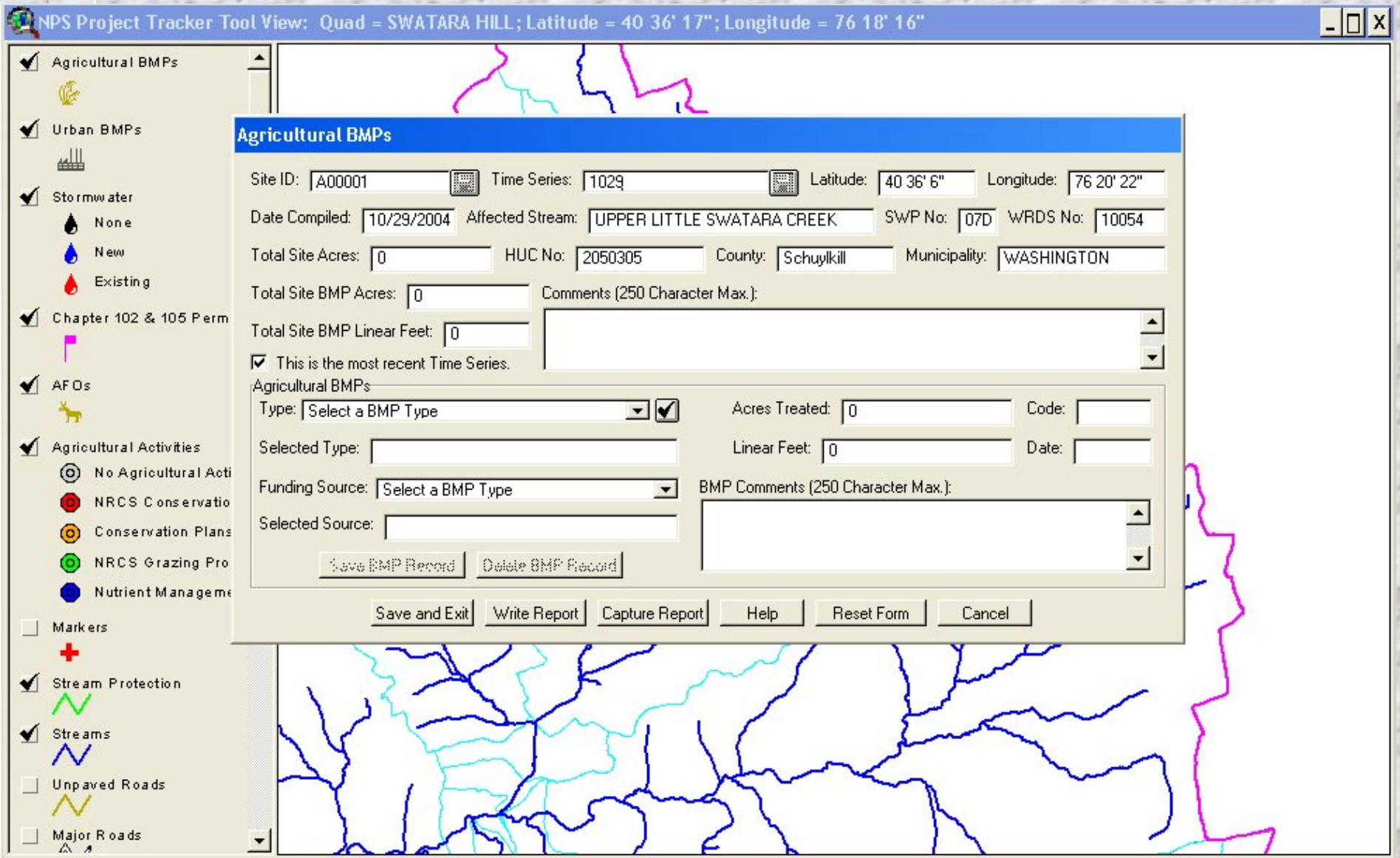
Unpaved Roads
Major Roads
Roads
Act 167
Municipalities
Quads


NPS Project Tracker Tool View: Quad = SWATARA HILL; Latitude = 40 36' 17"; Longitude = 76 18' 16"
Agricultural BMPs
Urban BMPs
Stormwater
None
New
Existing
Chapter 102 & 105 Perm
AFOs
Agricultural Activities
No Agricultural Acti
NRCS Conservatio
Conservation Plans
NRCS Grazing Pro
Nutrient Manageme
Markers
Stream Protection
Streams
Unpaved Roads
Major Roads
Animal Feeding Operations (AFOs)
Site ID: C00001
Time Series: 1029
Latitude: 40 34' 25"
Longitude: 76 17' 15"
Date Compiled: 10/29/2004
Affected Stream: LOWER LITTLE SWATARA CREEK
WRDS No: 10035
HUC No: 2050305
State Water Plan No: 07D
County: Schuylkill
Municipality: WASHINGTON
Animal Feeding Operations
Permitted
Yes
No
Size of Operation
Small (301 - 1000 AEUs)
Large (> 1000 AEUs)
BMPs Utilized
AWMS* (Livestock)
AWMS* (Poultry)
Barnyard/Feedlot Runoff Control
Phytase Feed Additives
*Animal Waste Management System
Number of Animals
Chickens:
Turkeys:
Sheep:
Hogs: 1200
Horses:
Dairy: 980
Beef: 67
Acres Covered:
Comments (250 Character Max.):
This is the most recent Time Series.
Save
Write Report
Capture Report
Reset Form
Cancel
Help


NPS Project Tracker Tool View: Quad = SWATARA HILL; Latitude = 40 36' 17"; Longitude = 76 18' 16"
Agricultural BMPs
Urban BMPs
Stormwater
None
New
Existing
Chapter 102 & 105 Perm
AFOs
Agricultural Activities
No Agricultural Acti
NRCS Conservatio
Conservation Plans
NRCS Grazing Pro
Nutrient Manageme
Markers
Stream Protection
Streams
Unpaved Roads
Major Roads
Agricultural BMPs
Site ID: A00001
Time Series: 1029
Latitude: 40 36' 6"
Longitude: 76 20' 22"
Date Compiled: 10/29/2004
Affected Stream: UPPER LITTLE SWATARA CREEK
SWP No: 07D
WRDS No: 10054
Total Site Acres: 0
HUC No: 2050305
County: Schuylkill
Municipality: WASHINGTON
Total Site BMP Acres: 0
Comments (250 Character Max.):
Total Site BMP Linear Feet: 0
This is the most recent Time Series.
Agricultural BMPs
Type: Select a BMP Type
Acres Treated: 0
Code:
Selected Type:
Linear Feet: 0
Date:
Funding Source: Select a BMP Type
BMP Comments (250 Character Max.):
Selected Source:
Save BMP Record
Delete BMP Record
Save and Exit
Write Report
Capture Report
Help
Reset Form
Cancel

Agricultural BMPs

Site ID: A00001 Time Series: 1029 Latitude: 40 36' 6" Longitude: 76 20' 22"

Date Compiled: 10/29/2004 Affected Stream: UPPER LITTLE SWATARA CREEK SWP No: 07D WRDS No: 10054

Total Site Acres: 0 HUC No: 2050305 County: Schuylkill Municipality: WASHINGTON

Total Site BMP Acres: 0

Total Site BMP Linear Feet: 0

Comments (250 Character Max.):

☑ This is the most recent Time Series.

Agricultural BMPs

Type: Select a BMP Type

- Channel Bank Vegetation (Ac.) (322)
- Conservation Cover (Ac.) (327)
- Conservation Crop Rotation (Ac.) (328)
- Constructed Wetland (Ac.) (656)

Select

Fundir

Select

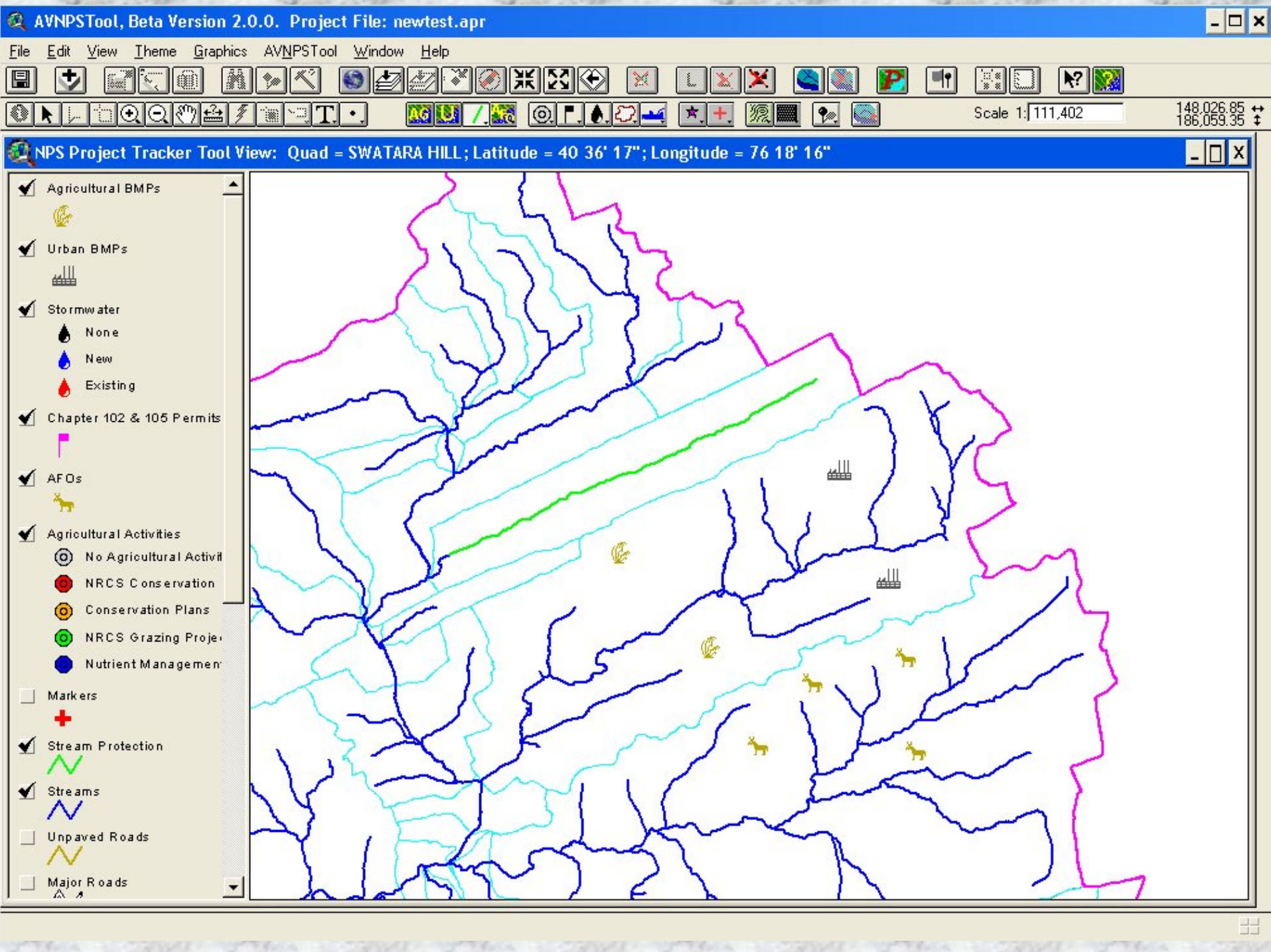
Save BMP Record Delete BMP Record

Acres Treated: 0 Code:

Linear Feet: 0 Date:

BMP Comments (250 Character Max.):

Save and Exit | Write Report | Capture Report | Help | Reset Form | Cancel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Agricultural BMPs
Urban BMPs
Stormwater
None
New
Existing
Chapter 102 & 105 Permits
AFOs
Agricultural Activities
No Agricultural Activi
NRCS Conservation
Conservation Plans
NRCS Grazing Proje
Nutrient Managemen
Markers
Stream Protection
Streams
Unpaved Roads
Major Roads

Stream Protection

Site ID: R00001 | Time Series: 1029 | Latitude: 40 37' 6" | Longitude: 76 20' 8"

Date Compiled: 10/29/2004 | Affected Stream: BLACK CREEK | WRDS No: 10077

HUC No: 2050305 | State Water Plan No: 07D | County: Schuylkill | Municipality: REILLY

Select Stream Protection Activities (Choose All That Apply)

- [x] Riparian Buffer (Grass)
- [ ] Riparian Buffer (Forested)
- [x] Streambank Fencing
- [ ] Streambank Stabilization

Stream Length

Total Length of Stream (ft): 32641.90

Select Land Use Type

- (•) Cropland
- ( ) Hay/Pasture
- ( ) Low Density Urban
- ( ) High Density Urban

Left Bank (facing upstream)

Riparian Buffer (Grass and Forested)

Length of Stream with Buffer (ft): 1500

Average Buffer Width (ft): 15

Acres of Buffer: 0.52

Streambank Fencing

Length of Stream with Fencing (ft): 3600

Streambank Stabilization

Length of Stream Stabilized (ft):

Right Bank (facing upstream)

Riparian Buffer (Grass and Forested)

Length of Stream with Buffer (ft): 2100

Average Buffer Width (ft): 15

Acres of Buffer: 0.72

Streambank Fencing

Length of Stream with Fencing (ft): 4200

Streambank Stabilization

Length of Stream Stabilized (ft):

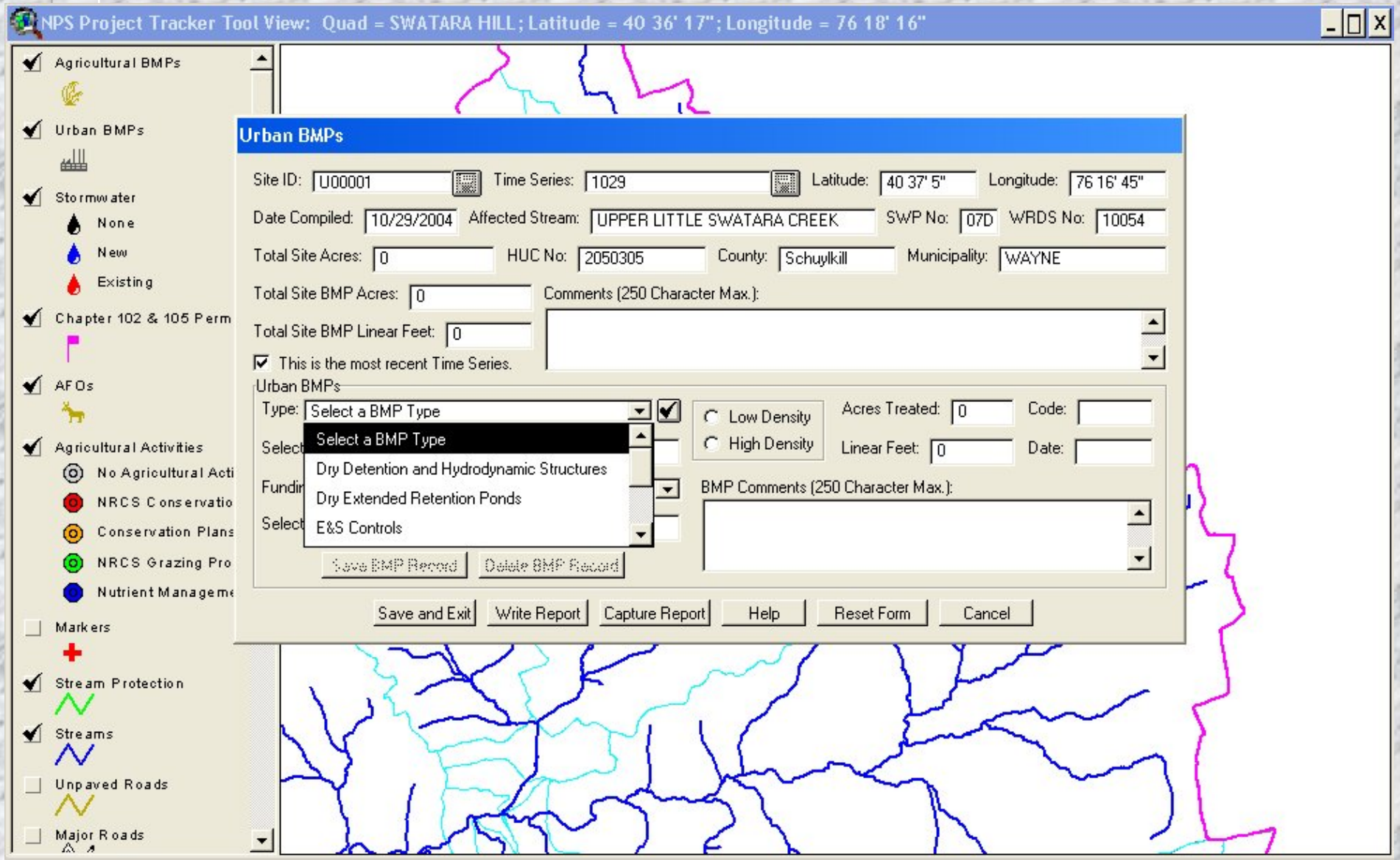
Comments (250 Character Max.):

Recently implemented activities

- [x] This is the most recent Time Series.

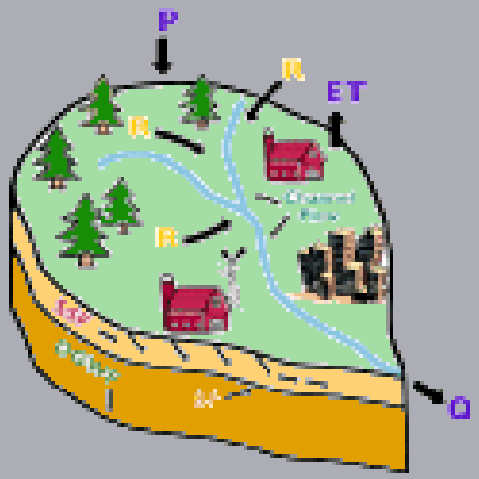
Help | Write Report | Capture Report

Save | Reset Form | Cancel


NPS Project Tracker Tool View: Quad = SWATARA HILL; Latitude = 40 36' 17"; Longitude = 76 18' 16"
Agricultural BMPs
Urban BMPs
Stormwater
None
New
Existing
Chapter 102 & 105 Perm
AFOs
Agricultural Activities
No Agricultural Acti
NRCS Conservatio
Conservation Plans
NRCS Grazing Pro
Nutrient Manageme
Markers
Stream Protection
Streams
Unpaved Roads
Major Roads
Urban BMPs
Site ID: U00001
Time Series: 1029
Latitude: 40 37' 5"
Longitude: 76 16' 45"
Date Compiled: 10/29/2004
Affected Stream: UPPER LITTLE SWATARA CREEK
SWP No: 07D
WRDS No: 10054
Total Site Acres: 0
HUC No: 2050305
County: Schuylkill
Municipality: WAYNE
Total Site BMP Acres: 0
Comments (250 Character Max.):
Total Site BMP Linear Feet: 0
This is the most recent Time Series.
Urban BMPs
Type: Select a BMP Type
Select a BMP Type
Dry Detention and Hydrodynamic Structures
Dry Extended Retention Ponds
E&S Controls
Low Density
High Density
Acres Treated: 0
Code:
Linear Feet: 0
Date:
BMP Comments (250 Character Max.):
Save BMP Record
Delete BMP Record
Save and Exit
Write Report
Capture Report
Help
Reset Form
Cancel

AVGWLF

ArcView GWLF Interface for Windows
Version 3.2



Created by

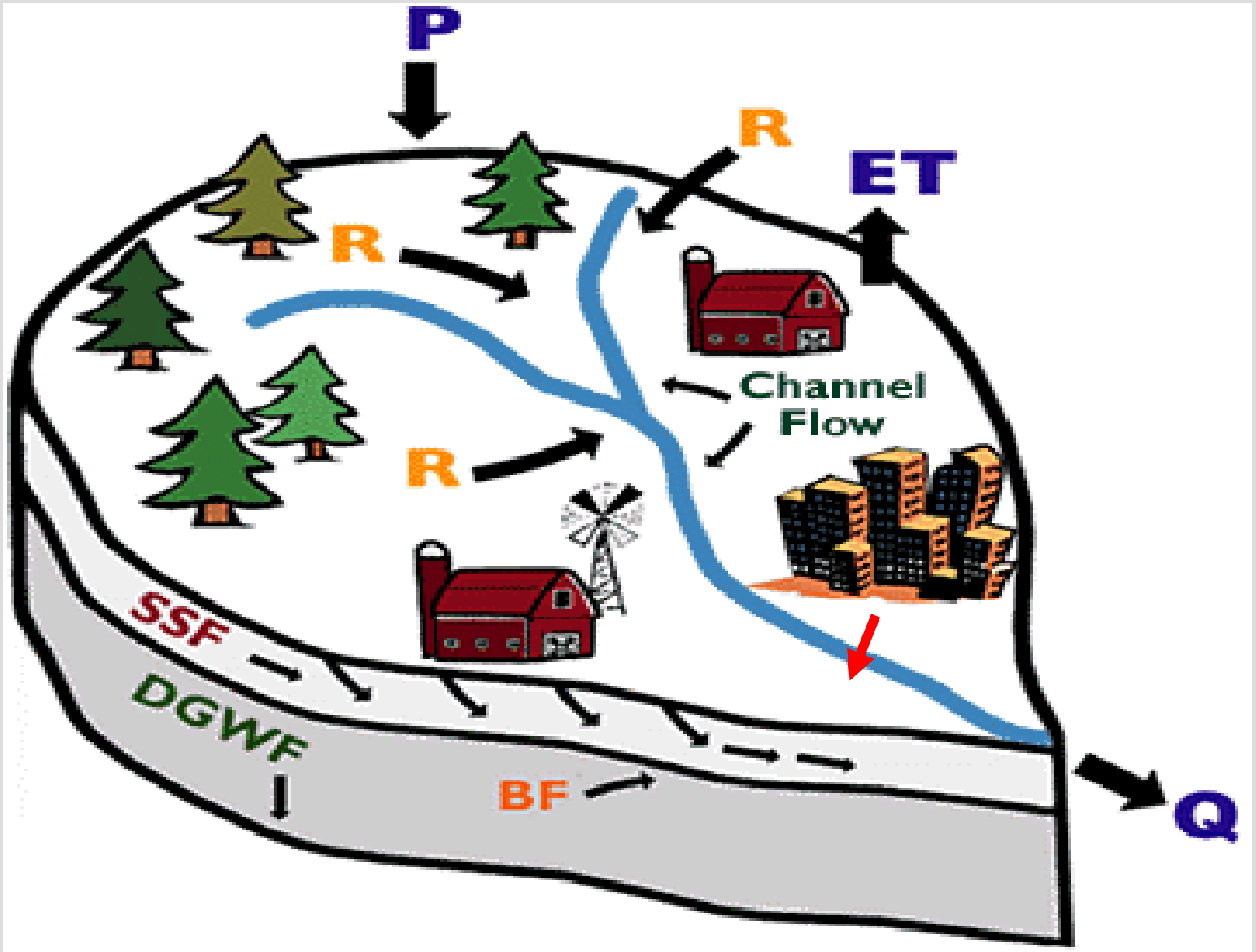
David W. Lehning

Barry M. Evans

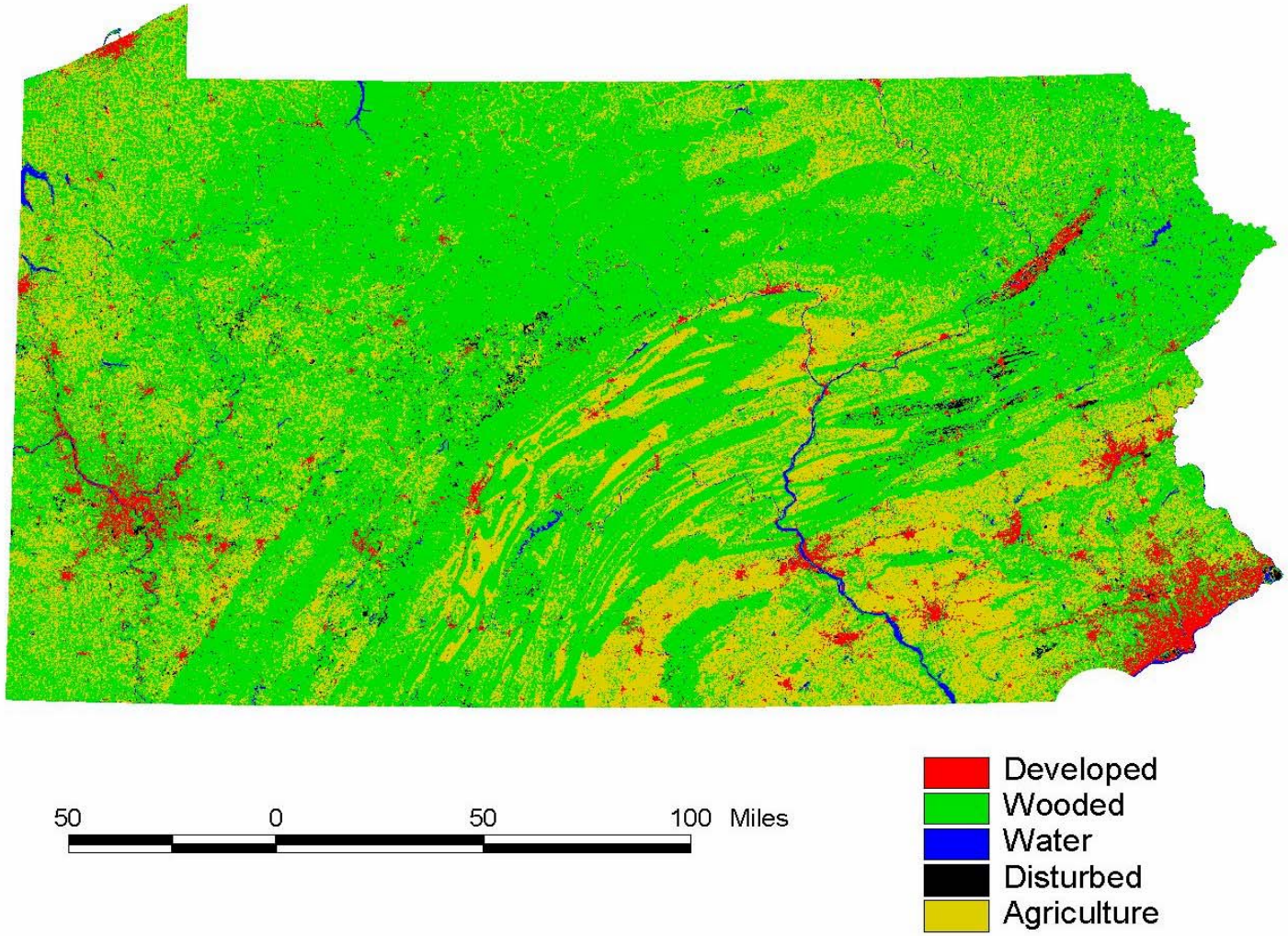
PENNSTATE

http://www.avgwlf.psu.edu/

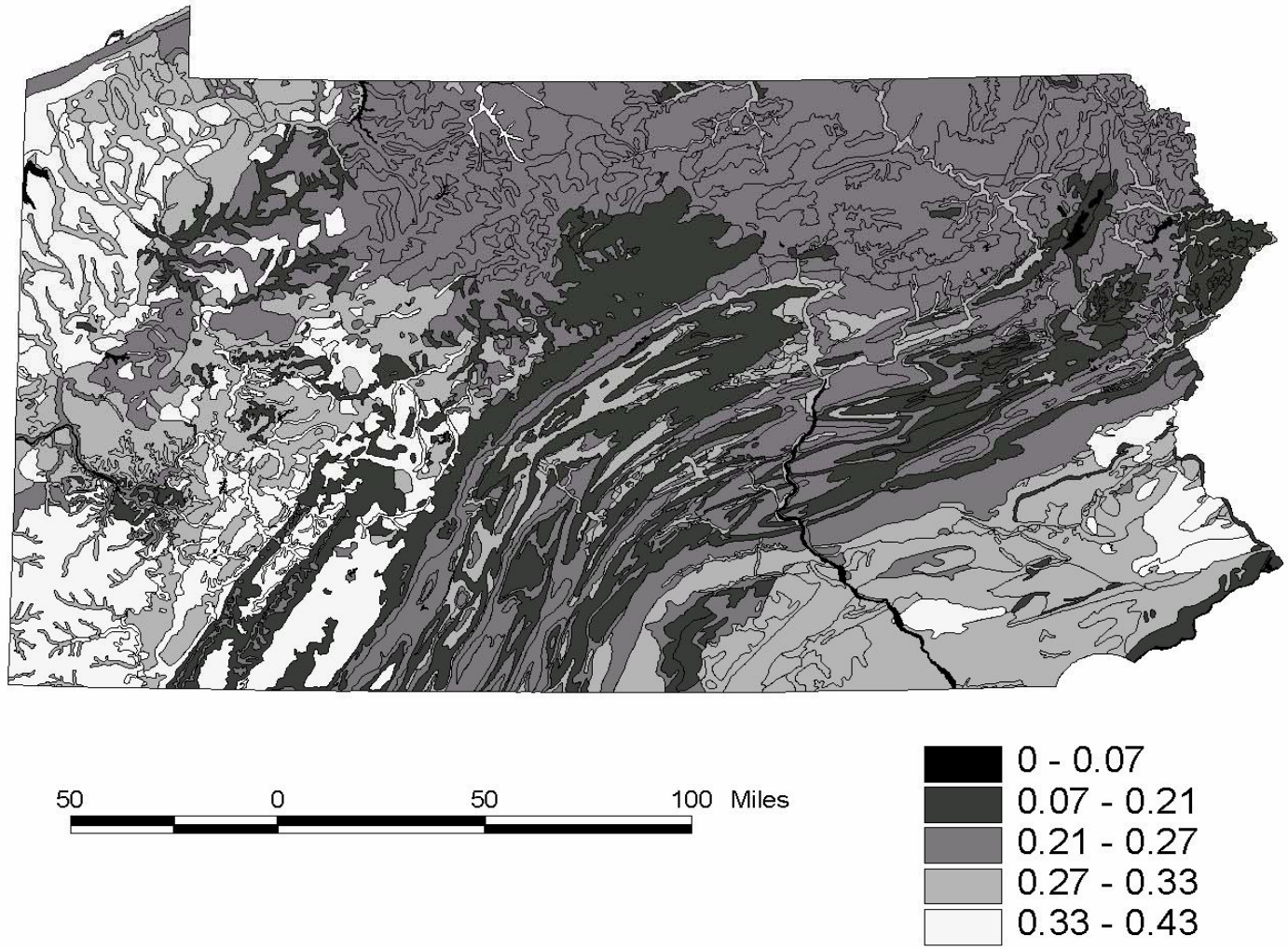
Watershed-Level Processes and Fluxes



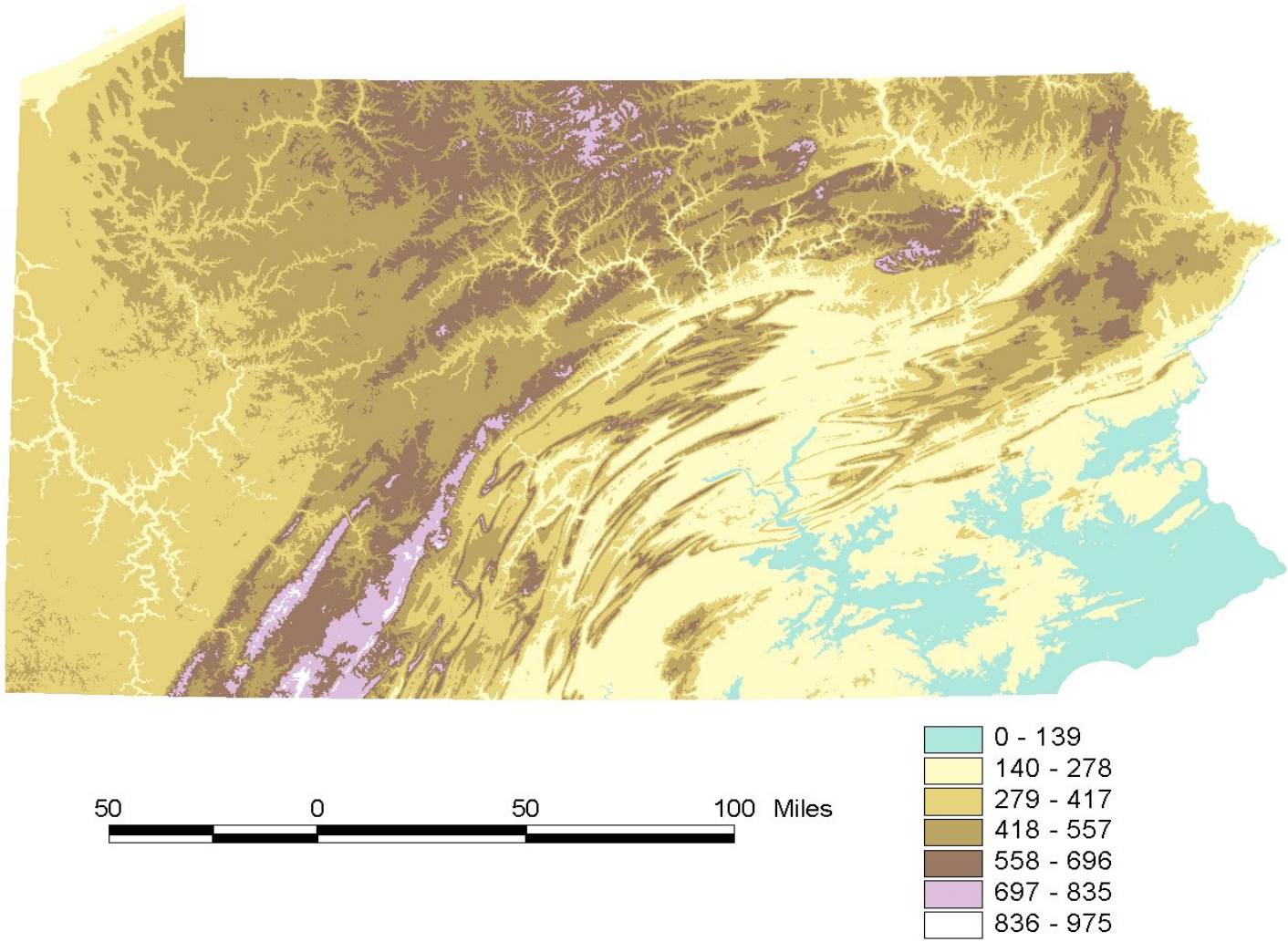
Generalized Land Use/Cover Map of Pennsylvania

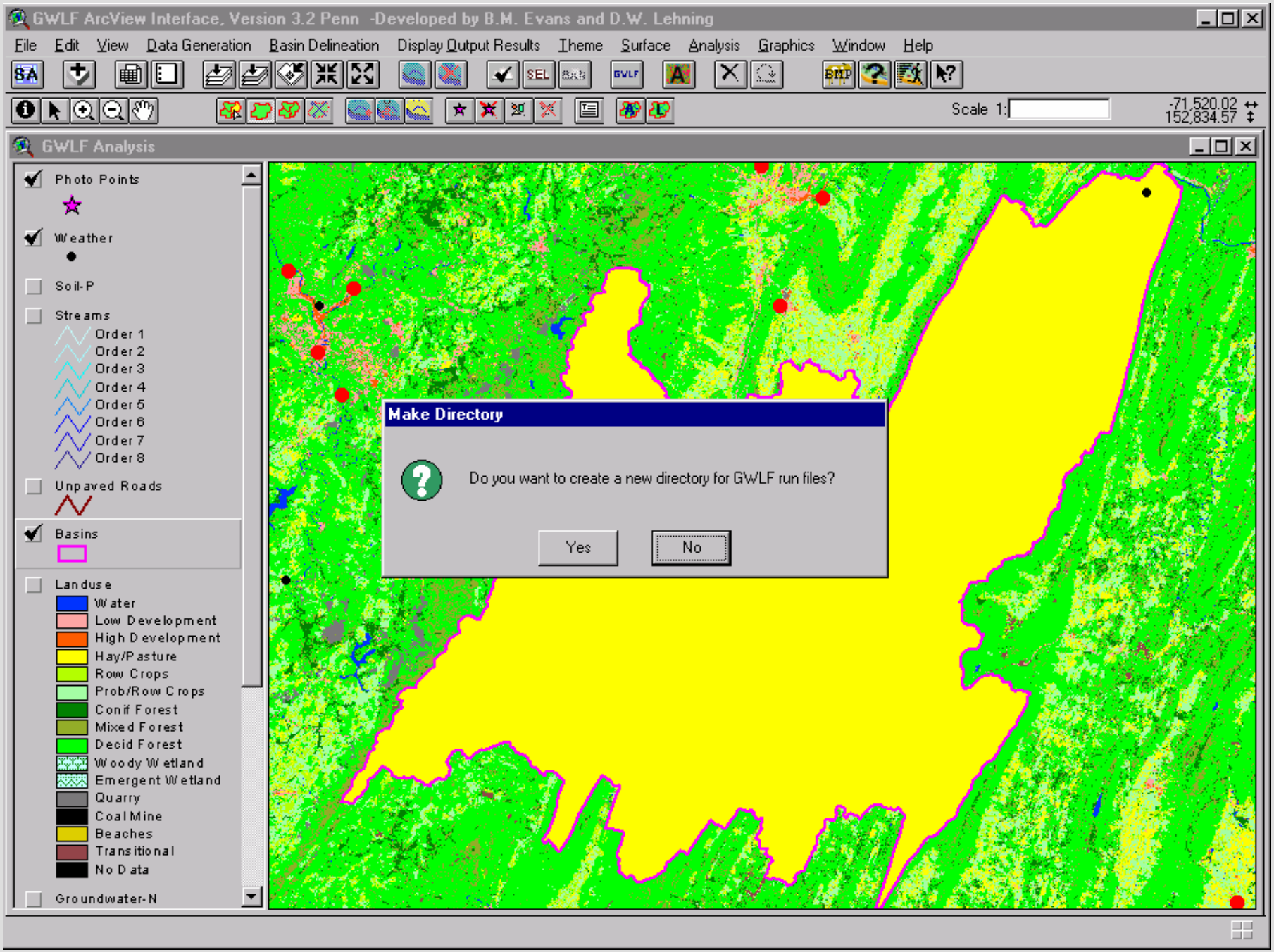


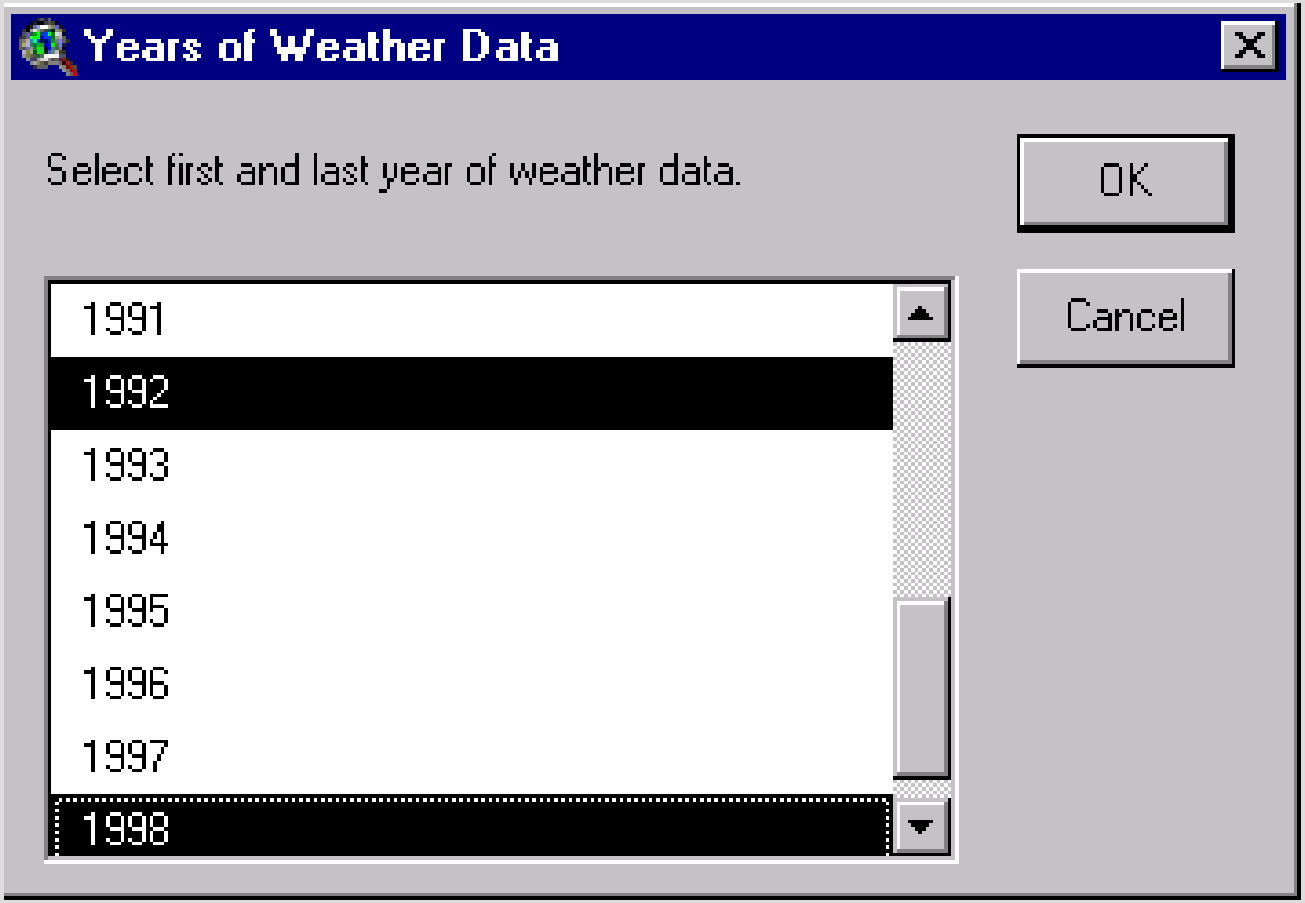
Inherent Soil Erodibility (K-Factor)

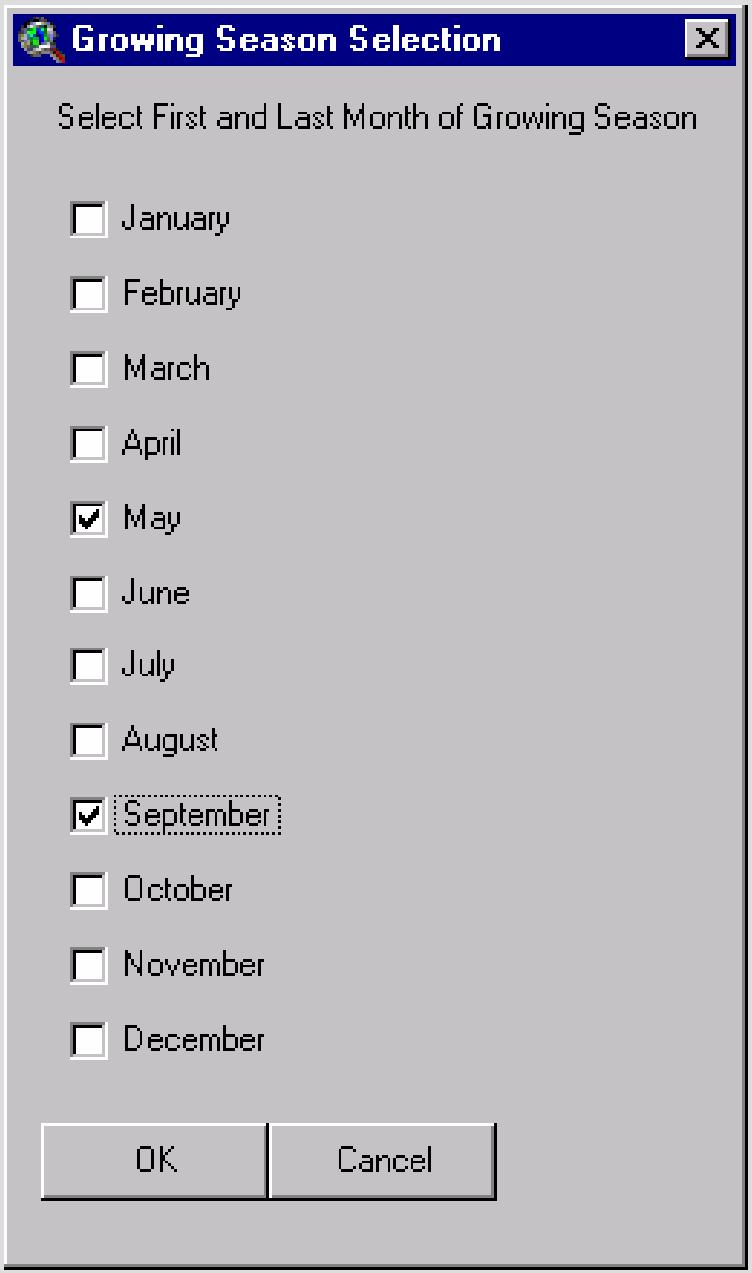


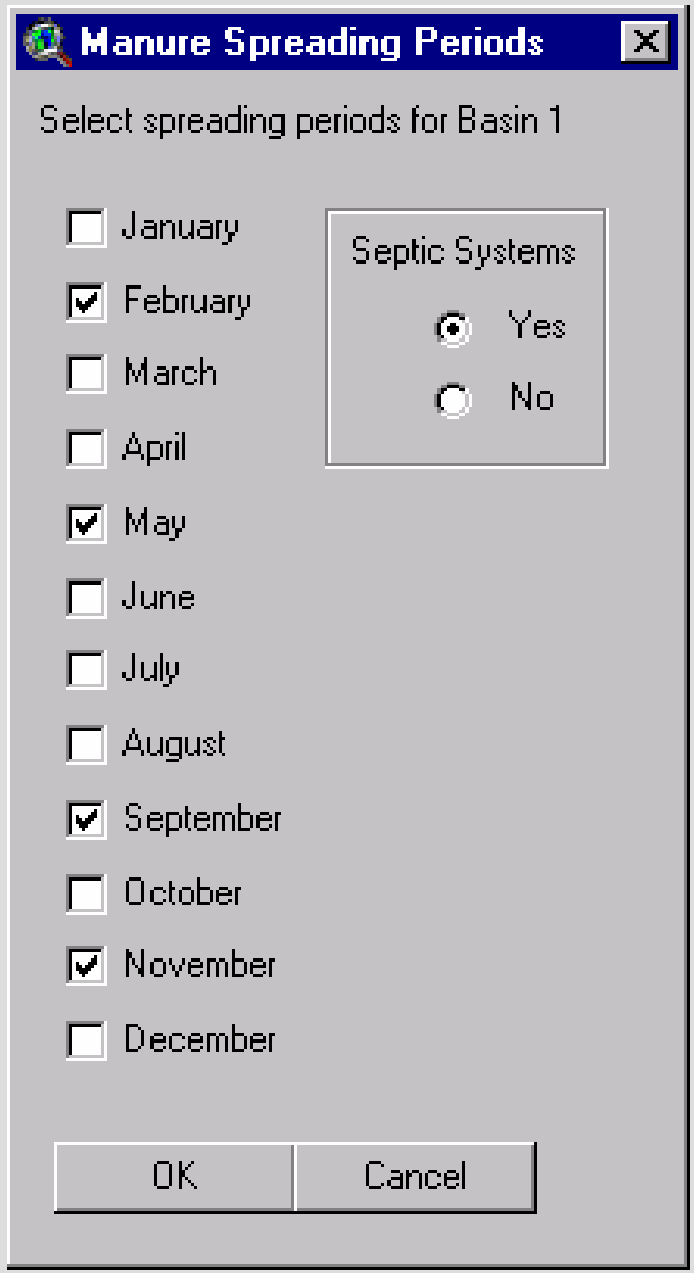
Topography (Elevation in Meters)

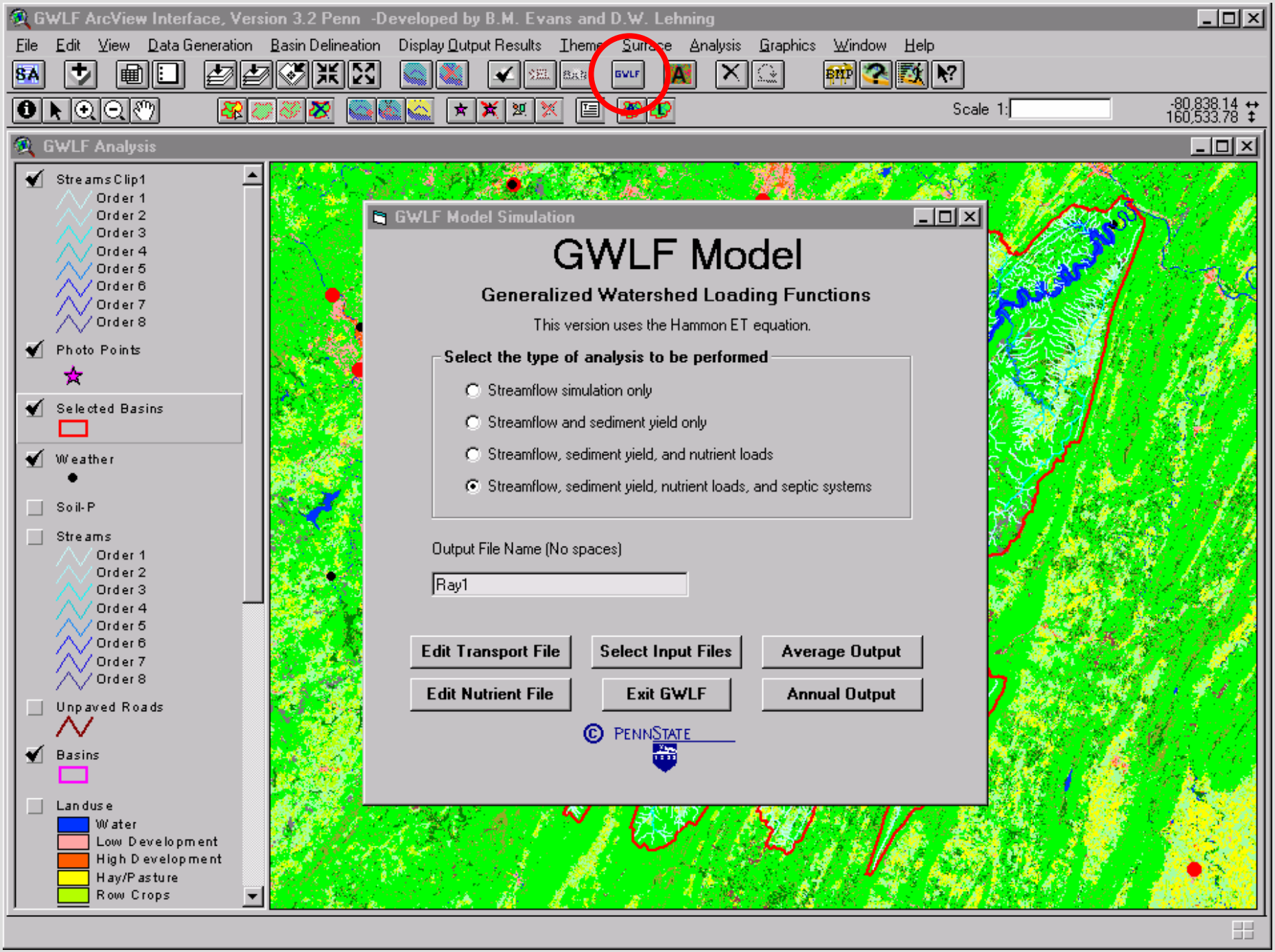


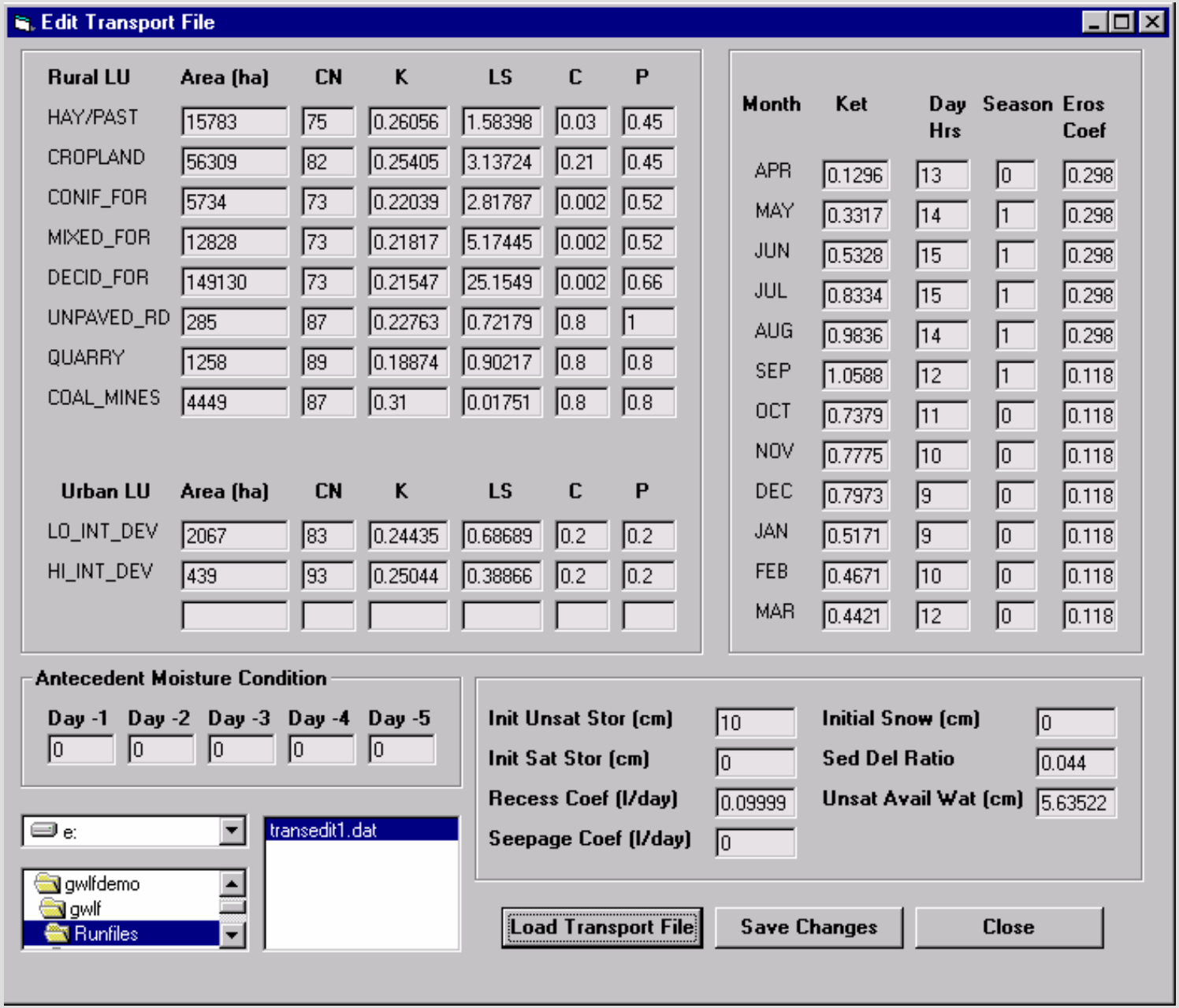

GWLF ArcView Interface, Version 3.2 Penn -Developed by B.M. Evans and D.W. Lehning
File Edit View Data Generation Basin Delineation Display Output Results Theme Surface Analysis Graphics Window Help
Scale 1:
-71,520.02
152,834.57
GWLF Analysis
Photo Points
Weather
Soil-P
Streams
Order 1
Order 2
Order 3
Order 4
Order 5
Order 6
Order 7
Order 8
Unpaved Roads
Basins
Landuse
Water
Low Development
High Development
Hay/Pasture
Row Crops
Prob/Row Crops
Conif Forest
Mixed Forest
Decid Forest
Woody Wetland
Emergent Wetland
Quarry
Coal Mine
Beaches
Transitional
No Data
Groundwater-N
Make Directory
Do you want to create a new directory for GWLF run files?
Yes
No

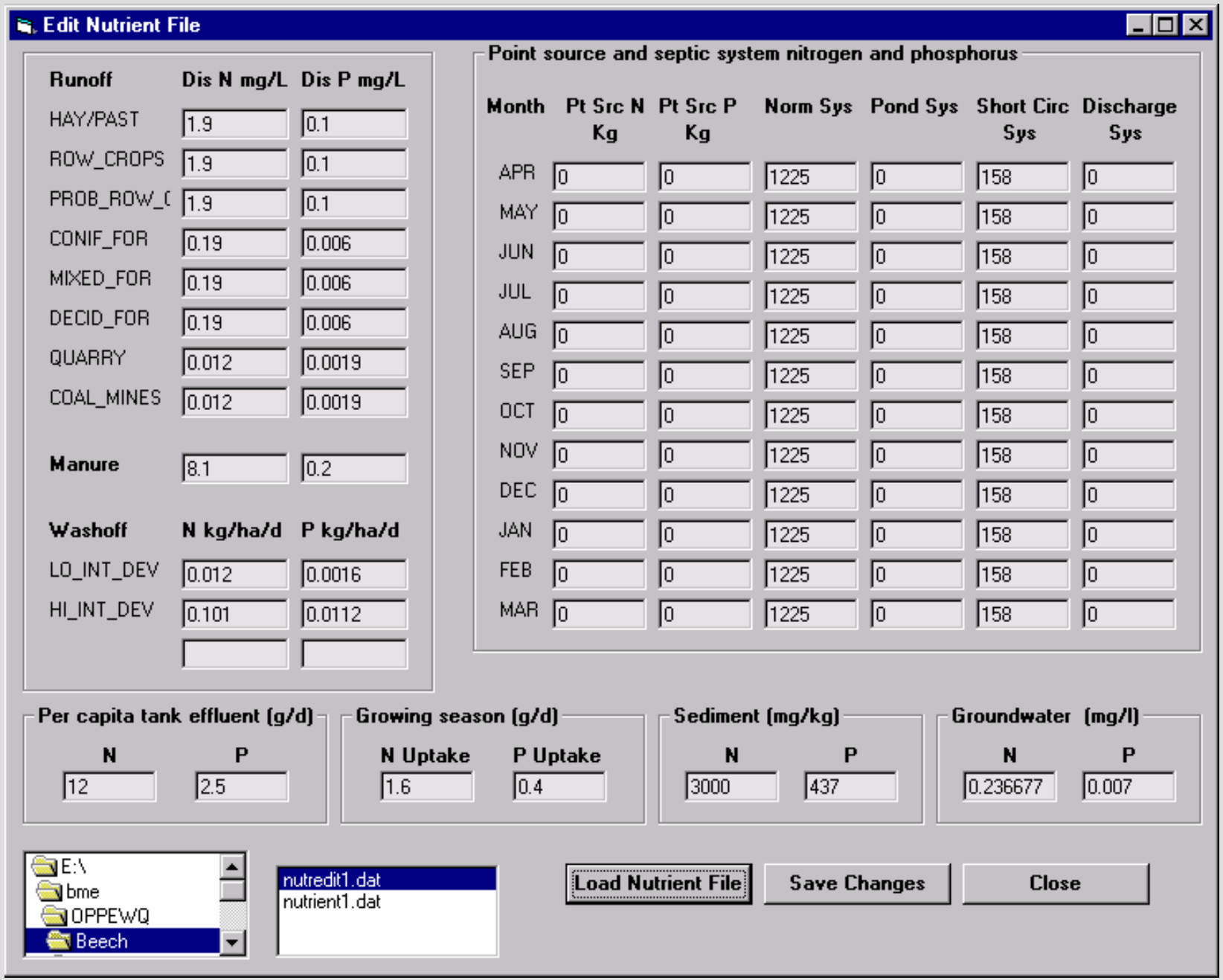

Years of Weather Data
Select first and last year of weather data.
OK
Cancel
1991
1992
1993
1994
1995
1996
1997
1998


Growing Season Selection
Select First and Last Month of Growing Season
January
February
March
April
May
June
July
August
September
October
November
December
OK
Cancel


Manure Spreading Periods
Select spreading periods for Basin 1
January
February
March
April
May
June
July
August
September
October
November
December
Septic Systems
Yes
No
OK
Cancel


GWLF ArcView Interface, Version 3.2 Penn -Developed by B.M. Evans and D.W. Lehning
File Edit View Data Generation Basin Delineation Display Output Results Theme Surface Analysis Graphics Window Help
GWLF
Scale 1:
-80,838.14
160,533.78
GWLF Analysis
Streams Clip1
Order 1
Order 2
Order 3
Order 4
Order 5
Order 6
Order 7
Order 8
Photo Points
Selected Basins
Weather
Soil-P
Streams
Order 1
Order 2
Order 3
Order 4
Order 5
Order 6
Order 7
Order 8
Unpaved Roads
Basins
Landuse
Water
Low Development
High Development
Hay/Pasture
Row Crops
GWLF Model Simulation
GWLF Model
Generalized Watershed Loading Functions
This version uses the Hammon ET equation.
Select the type of analysis to be performed
Streamflow simulation only
Streamflow and sediment yield only
Streamflow, sediment yield, and nutrient loads
Streamflow, sediment yield, nutrient loads, and septic systems
Output File Name (No spaces)
Ray1
Edit Transport File
Select Input Files
Average Output
Edit Nutrient File
Exit GWLF
Annual Output
© PENNSTATE


Edit Transport File
Rural LU
Area (ha)
CN
K
LS
C
P
HAY/PAST
15783
75
0.26056
1.58398
0.03
0.45
CROPLAND
56309
82
0.25405
3.13724
0.21
0.45
CONIF_FOR
5734
73
0.22039
2.81787
0.002
0.52
MIXED_FOR
12828
73
0.21817
5.17445
0.002
0.52
DECID_FOR
149130
73
0.21547
25.1549
0.002
0.66
UNPAVED_RD
285
87
0.22763
0.72179
0.8
1
QUARRY
1258
89
0.18874
0.90217
0.8
0.8
COAL_MINES
4449
87
0.31
0.01751
0.8
0.8
Urban LU
Area (ha)
CN
K
LS
C
P
LO_INT_DEV
2067
83
0.24435
0.68689
0.2
0.2
HI_INT_DEV
439
93
0.25044
0.38866
0.2
0.2
Month
Ket
Day Hrs
Season
Eros Coef
APR
0.1296
13
0
0.298
MAY
0.3317
14
1
0.298
JUN
0.5328
15
1
0.298
JUL
0.8334
15
1
0.298
AUG
0.9836
14
1
0.298
SEP
1.0588
12
1
0.118
OCT
0.7379
11
0
0.118
NOV
0.7775
10
0
0.118
DEC
0.7973
9
0
0.118
JAN
0.5171
9
0
0.118
FEB
0.4671
10
0
0.118
MAR
0.4421
12
0
0.118
Antecedent Moisture Condition
Day -1
Day -2
Day -3
Day -4
Day -5
0
0
0
0
0
Init Unsat Stor (cm)
10
Initial Snow (cm)
0
Init Sat Stor (cm)
0
Sed Del Ratio
0.044
Recess Coef (l/day)
0.09999
Unsat Avail Wat (cm)
5.63522
Seepage Coef (l/day)
0
e:
transedit1.dat
gwlfdemo
gwlf
Runfiles
Load Transport File
Save Changes
Close


Edit Nutrient File
Runoff
Dis N mg/L
Dis P mg/L
HAY/PAST
1.9
0.1
ROW_CROPS
1.9
0.1
PROB_ROW_(
1.9
0.1
CONIF_FOR
0.19
0.006
MIXED_FOR
0.19
0.006
DECID_FOR
0.19
0.006
QUARRY
0.012
0.0019
COAL_MINES
0.012
0.0019
Manure
8.1
0.2
Washoff
N kg/ha/d
P kg/ha/d
LO_INT_DEV
0.012
0.0016
HI_INT_DEV
0.101
0.0112
Point source and septic system nitrogen and phosphorus
Month
Pt Src N Kg
Pt Src P Kg
Norm Sys
Pond Sys
Short Circ Sys
Discharge Sys
APR 0 0 1225 0 158 0
MAY 0 0 1225 0 158 0
JUN 0 0 1225 0 158 0
JUL 0 0 1225 0 158 0
AUG 0 0 1225 0 158 0
SEP 0 0 1225 0 158 0
OCT 0 0 1225 0 158 0
NOV 0 0 1225 0 158 0
DEC 0 0 1225 0 158 0
JAN 0 0 1225 0 158 0
FEB 0 0 1225 0 158 0
MAR 0 0 1225 0 158 0
Per capita tank effluent (g/d)
N
P
12
2.5
Growing season (g/d)
N Uptake
P Uptake
1.6
0.4
Sediment (mg/kg)
N
P
3000
437
Groundwater (mg/l)
N
P
0.236677
0.007
E:\
bme
OPPEWQ
Beech
nutredit1.dat
nutrient1.dat
Load Nutrient File
Save Changes
Close

Average Hydrology by Month

GWLF Transport Summary for Ray1

Period of analysis: 23 years, 1976 to 1998

	Units in Centemeters				
Month	**Precip**	**Evapotrans**	**Gr. Wat. Flow**	**Runoff**	**Streamflow**
APR	7.66	0.59	7.3	0.5	7.8
MAY	10.36	2.56	7.2	0.2	7.5
JUN	9.27	6.01	5.6	0.3	5.8
JUL	8.99	9.74	2.2	0.3	2.5
AUG	8.2	8.06	0.5	0.2	0.6
SEP	8.7	5.46	0.7	0.5	1.2
OCT	8.73	2.75	2.6	1	3.5
NOV	9.06	1.5	4.8	0.9	5.8
DEC	6.77	0.59	5.9	0.5	6.3
JAN	6.58	0.2	4	1.1	5.1
FEB	5.44	0.33	4.4	1	5.3
MAR	8.21	0.99	6.8	1.1	7.9
Total	97.97	38.77	51.9	7.5	59.4

Go Back | Loads by Month | Close

Average Loads by Month

GWLF Nutrient Summary for Ray1

Period of analysis: 23 years, 1976 to 1998

	Kg		Nutrient Loads (Kg)			
Month	Erosion	Sediment	Dis. Nitr.	Tot. Nitr.	Dis. Phos.	Tot. Phos
APR	148933.8	6553.1	234033.4	237567.2	2225.3	2857.5
MAY	231509.6	10186.4	232754	234729.5	2211.2	2546
JUN	222953.1	9809.9	178750.6	180659.3	1847.3	2173.8
JUL	233392.5	10269.3	70045	79651.5	1117.1	2892.1
AUG	202436.9	8907.2	16402.4	26389.6	754.5	2603.8
SEP	100689.7	4430.3	62595.2	78276.7	1775.1	4696.4
OCT	105314.7	4633.8	159154.9	185376.7	3068.6	7961.9
NOV	100773.2	4434	224969	254778.7	3406.9	8965.4
DEC	36663.9	1613.2	189214.1	196717	1925.4	3294.9
JAN	12818.7	564	130788.2	162028.4	1531.6	7360.3
FEB	26275.3	1156.1	140764.1	165622.6	1596	6227
MAR	46575	2049.3	217613.8	255396.1	2116.4	9163.5
Total	1468336.4	64606.8	1857084.6	2057193.2	23575.5	60742.7

Go Back | Loads by Source | Close

Average Loads by Source

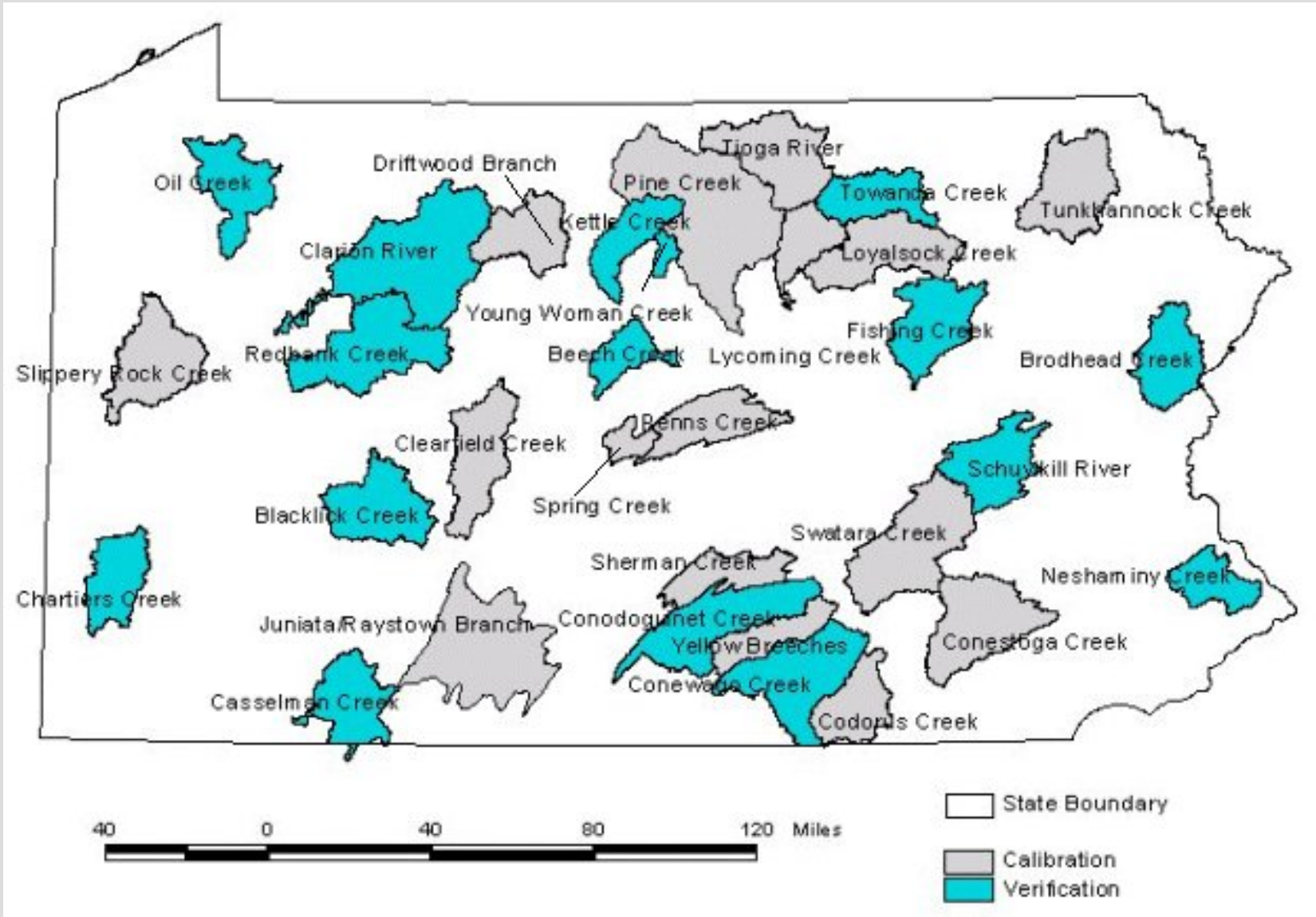
GWLF Total Loads for Run99

Period of analysis: 7 years, from Apr 1989 to Mar 1996

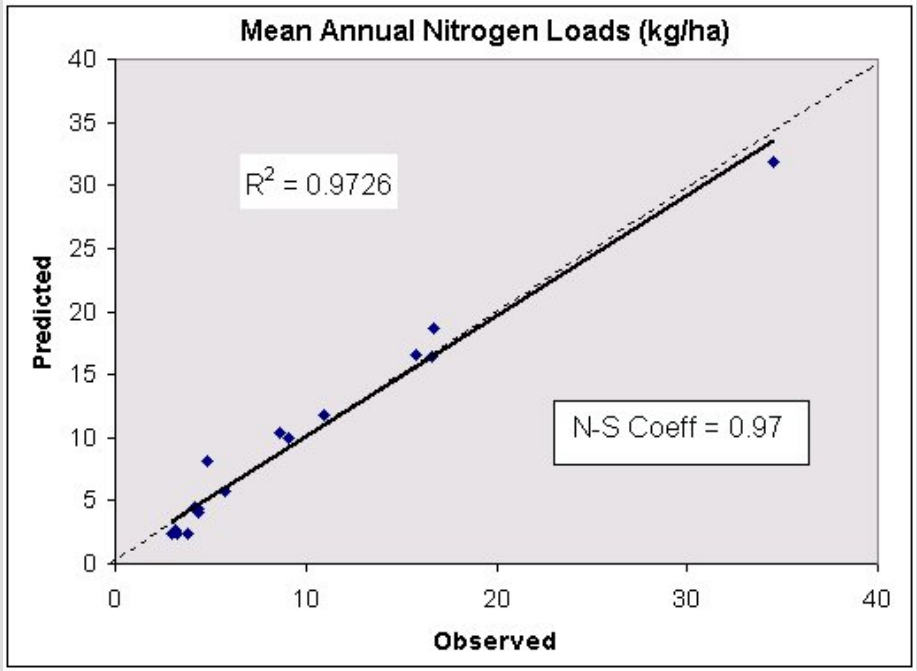
Source	(Ha) Area	(cm) Runoff	Mg (1000 Kg) Erosion	Mg (1000 Kg) Sediment	Total Loads (Kg) Dis. Nitr.	Total Loads (Kg) Tot. Nitr.	Total Loads (Kg) Dis. Phos.	Total Loads (Kg) Tot. Phos.
HAY/PAST	5286	7.84	1672.41	115.4	10621.53	10967.72	1377.37	1448.57
CROPLAND	16654	14.15	54859.61	3785.31	60642.26	71998.2	7736.03	10071.56
CONIF_FOR	739	6.62	11.63	0.8	92.91	95.32	2.93	3.43
MIXED_FOR	4204	6.62	94.17	6.5	528.54	548.03	16.69	20.7
DECID_FOR	15158	6.62	564.04	38.92	1905.7	2022.46	60.18	84.19
UNPAVED_RD	7	21.84	44.84	3.09	44.34	53.62	3.06	4.97
QUARRY	102	26.19	561.7	38.76	3.21	119.48	0.51	24.42
COAL_MINES	61	21.84	241.23	16.65	1.6	51.53	0.25	10.52
TRANSITION	59	21.84	218.44	15.07	373.71	418.92	25.77	35.07
LO_INT_DEV	8602	15.42	3070.11	211.84	0.0	10424.05	0.0	1389.87
HI_INT_DEV	2172	38.8	493.03	34.02	0.0	5674.65	0.0	629.27
Stream Bank				48894.6		73341.9		15084.0
Groundwater					248086.79	248086.79	12190.22	12190.22
Point Sources					223072.8	223072.8	13096.56	13096.56
Septic Syst.					55503.15	55503.15	307.58	307.58
Totals	53044	11.9	61831.2	53161.0	600876.53	702378.61	34817.15	54400.92

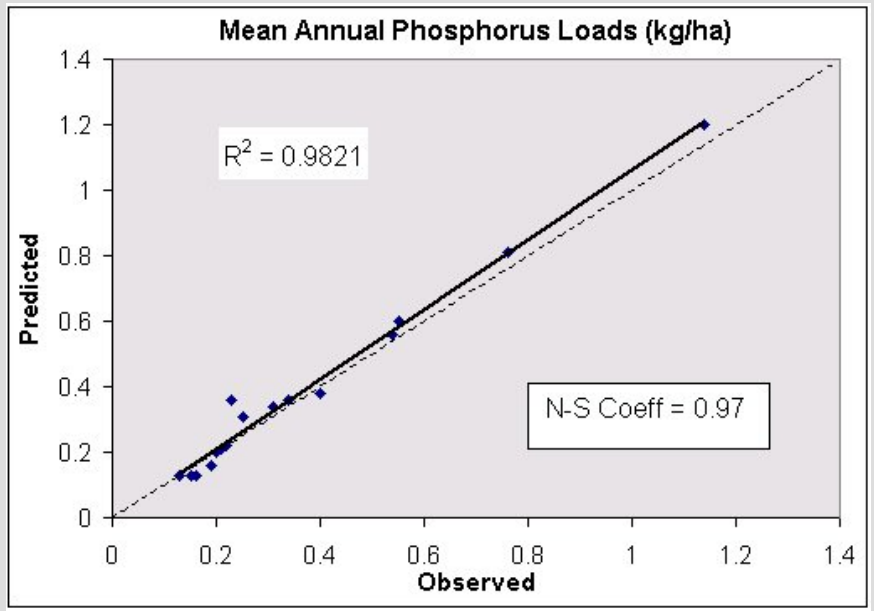
Go Back | Print | Export to Jpeg | Close

Model Calibration

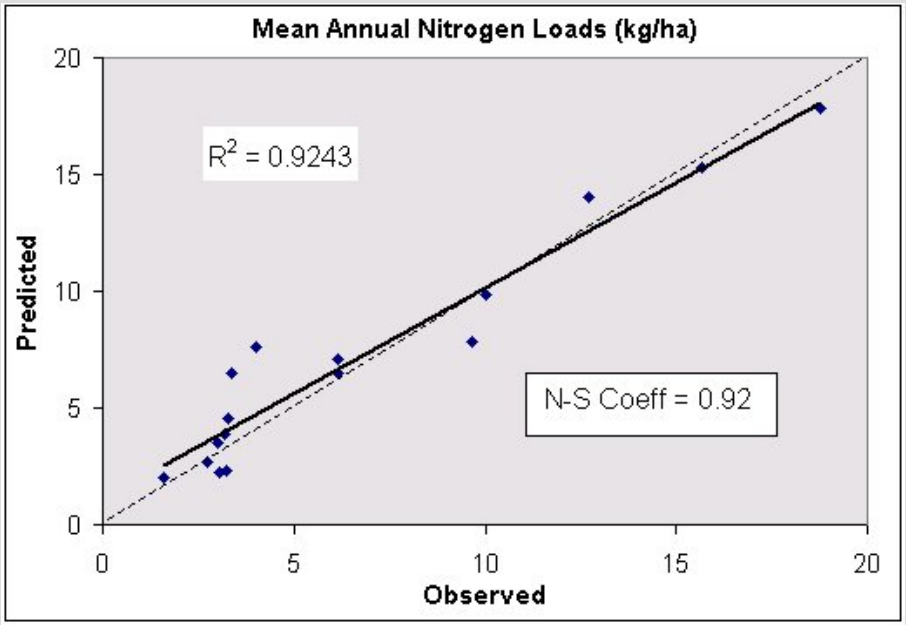


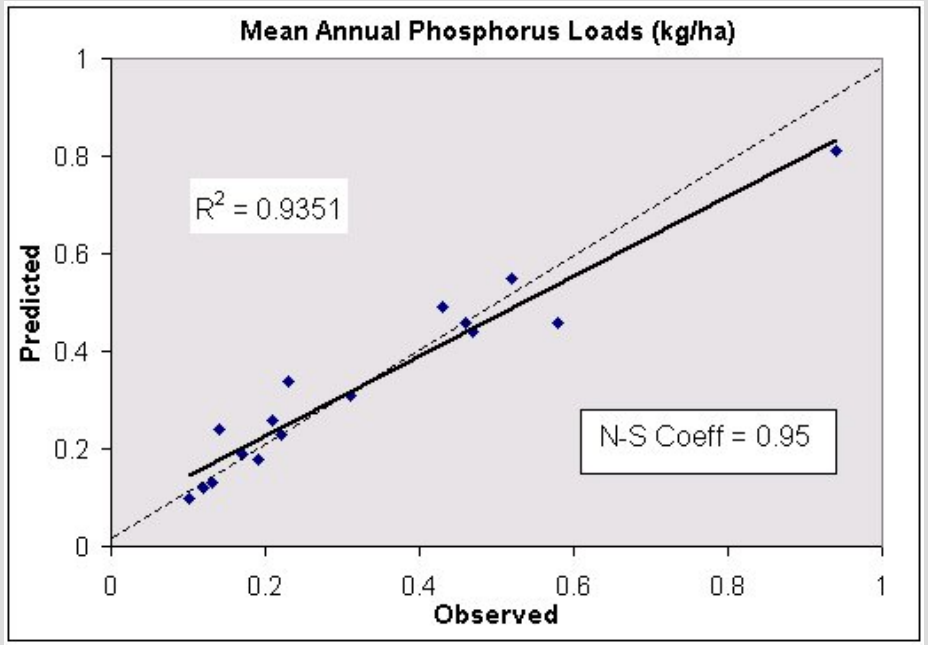
Calibration Results



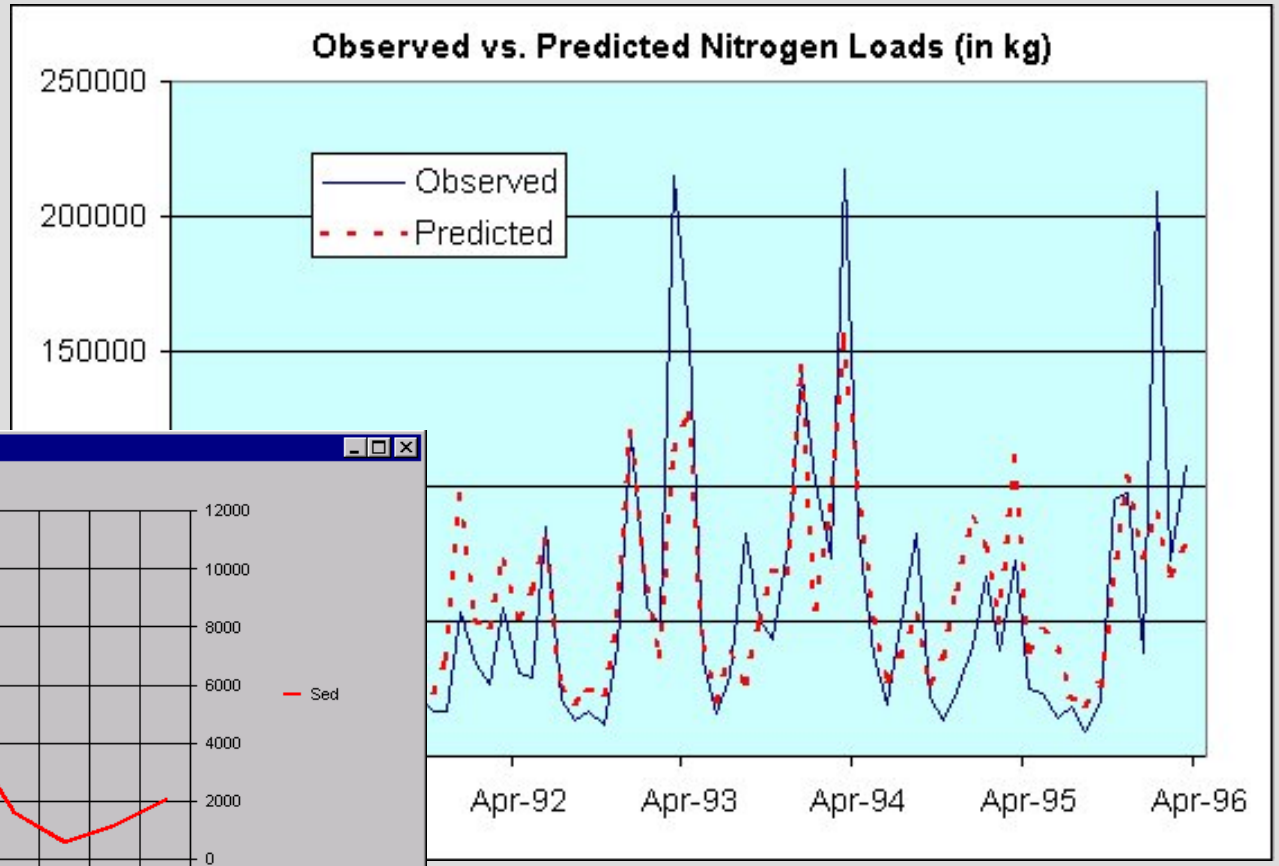


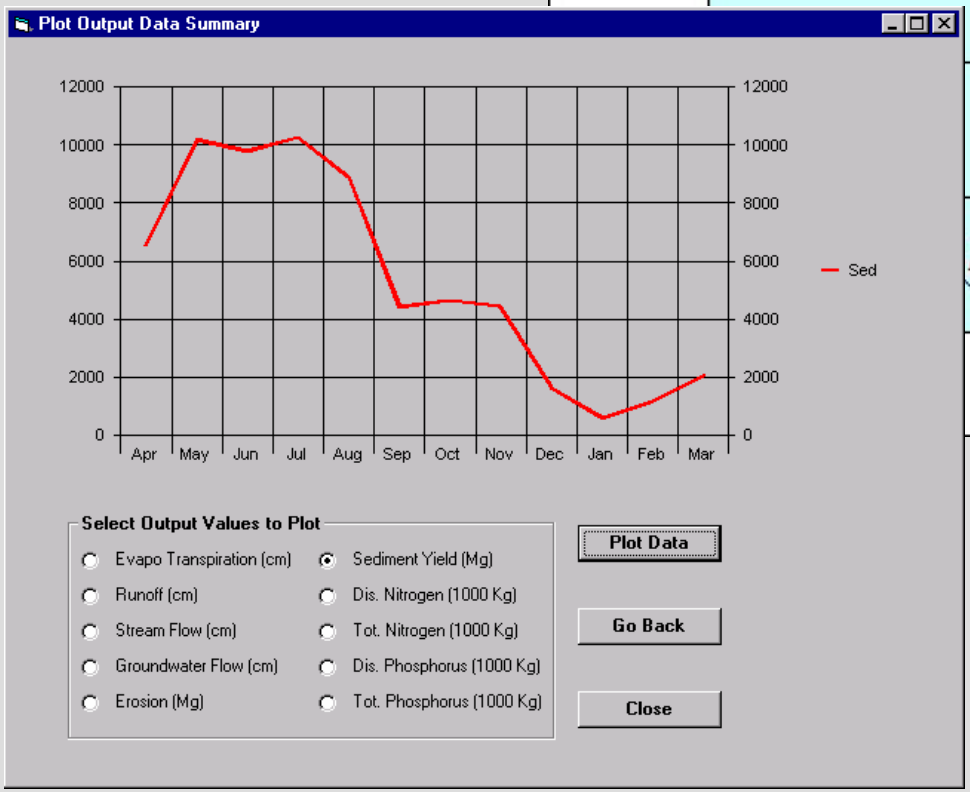
Verification Results

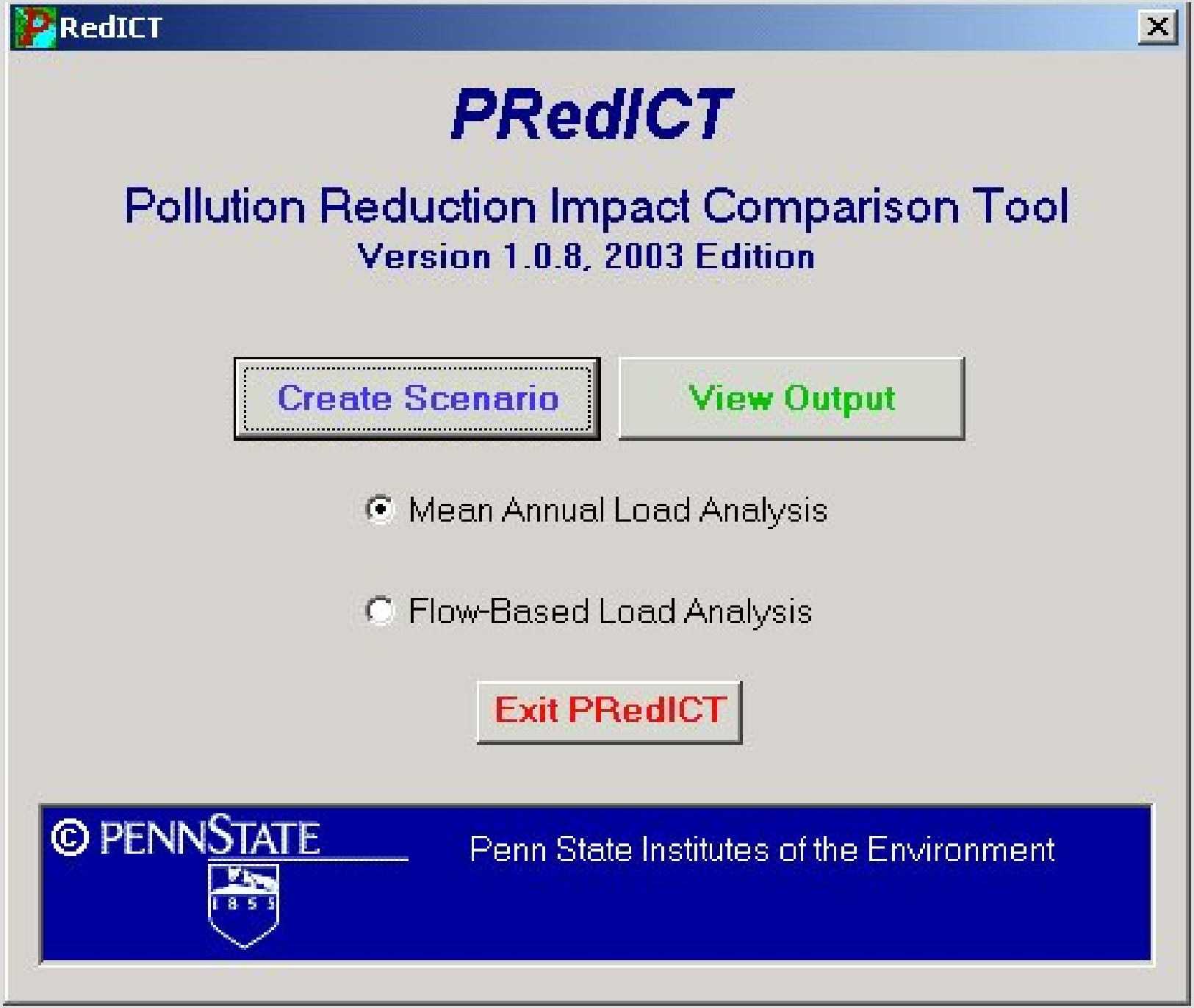




Data Visualization Options






RedICT
PRedICT
Pollution Reduction Impact Comparison Tool
Version 1.0.8, 2003 Edition
Create Scenario
View Output
Mean Annual Load Analysis
Flow-Based Load Analysis
Exit PRedICT
© PENNSTATE
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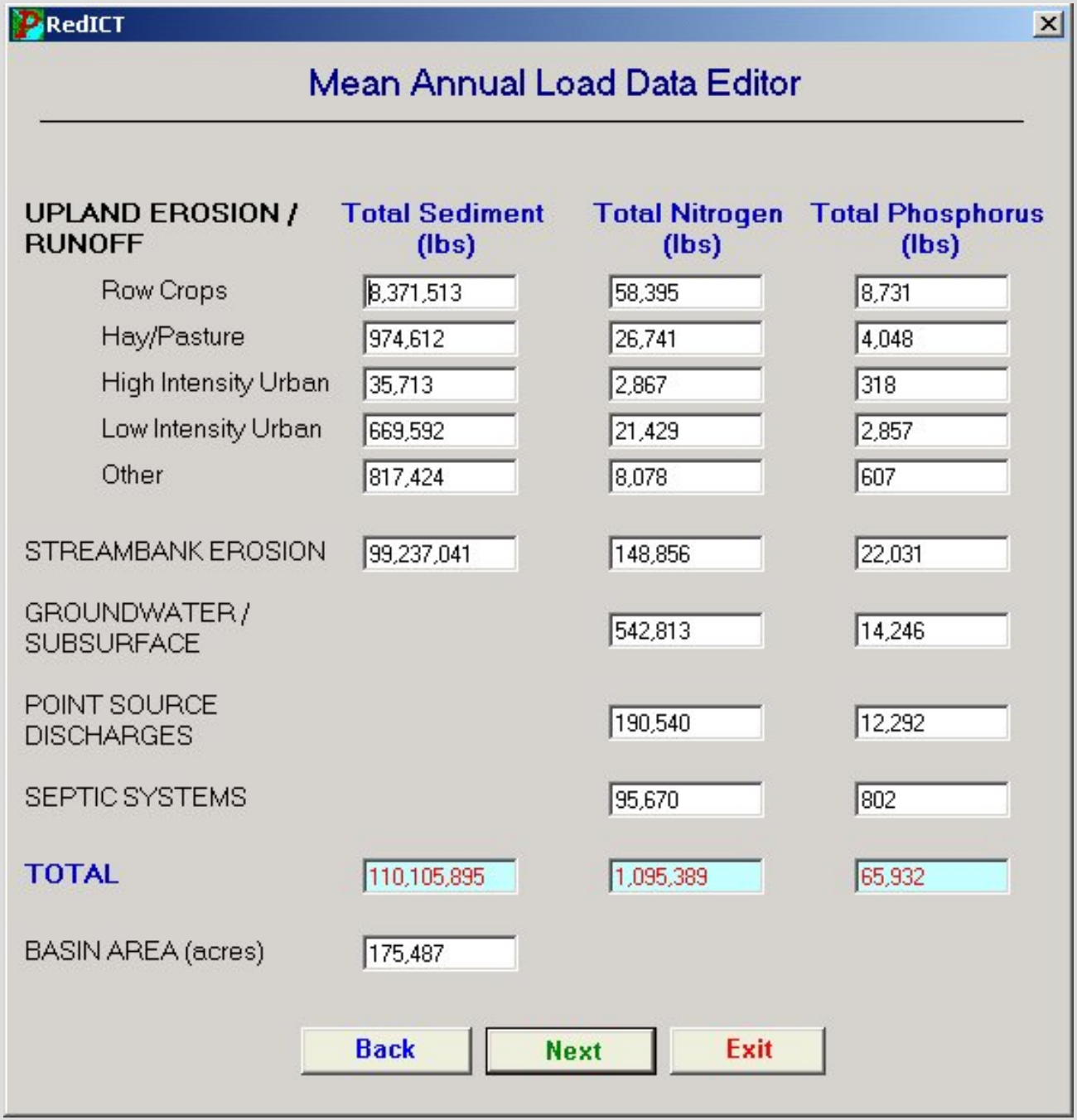
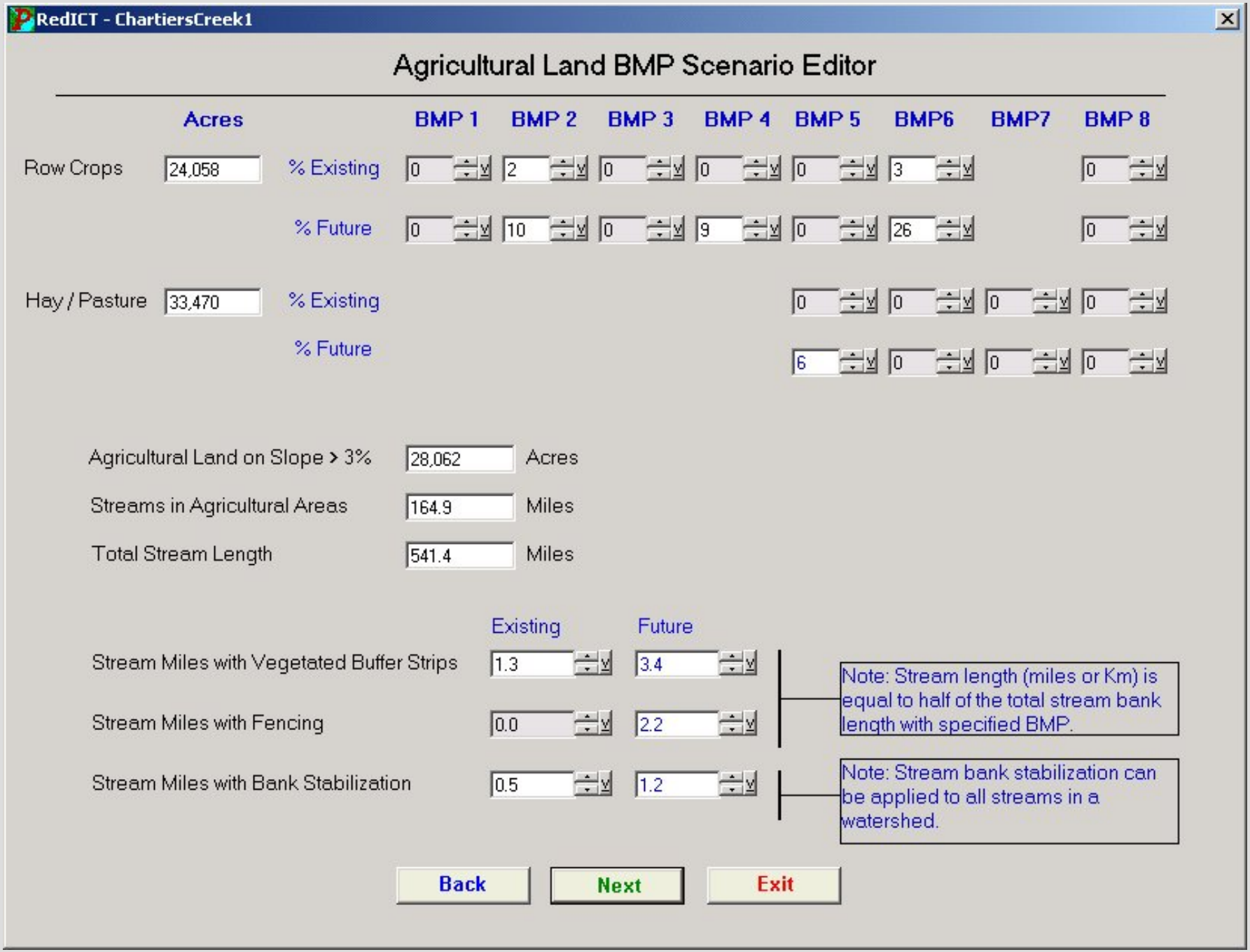

RedICT
Mean Annual Load Data Editor
UPLAND EROSION / RUNOFF
Total Sediment (lbs)
Total Nitrogen (lbs)
Total Phosphorus (lbs)
Row Crops
8,371,513
58,395
8,731
Hay/Pasture
974,612
26,741
4,048
High Intensity Urban
35,713
2,867
318
Low Intensity Urban
669,592
21,429
2,857
Other
817,424
8,078
607
STREAMBANK EROSION
99,237,041
148,856
22,031
GROUNDWATER / SUBSURFACE
542,813
14,246
POINT SOURCE DISCHARGES
190,540
12,292
SEPTIC SYSTEMS
95,670
802
TOTAL
110,105,895
1,095,389
65,932
BASIN AREA (acres)
175,487
Back
Next
Exit


RedICT - ChartiersCreek1
Agricultural Land BMP Scenario Editor
Acres
BMP 1
BMP 2
BMP 3
BMP 4
BMP 5
BMP6
BMP7
BMP 8
Row Crops
24,058
% Existing
0
2
0
0
0
3
0
% Future
0
10
0
9
0
26
0
Hay / Pasture
33,470
% Existing
0
0
0
0
% Future
6
0
0
0
Agricultural Land on Slope > 3%
28,062
Acres
Streams in Agricultural Areas
164.9
Miles
Total Stream Length
541.4
Miles
Existing
Future
Stream Miles with Vegetated Buffer Strips
1.3
3.4
Stream Miles with Fencing
0.0
2.2
Stream Miles with Bank Stabilization
0.5
1.2
Note: Stream length (miles or Km) is equal to half of the total stream bank length with specified BMP.
Note: Stream bank stabilization can be applied to all streams in a watershed.
Back
Next
Exit

RedICT - ChartiersCreek1

Urban Land BMP Scenario Editor

High Density Urban

Acres: 3,924

Constructed Wetlands

% Existing: 2

% Future: 12

Drainage Area/ Wetland (Acres): 10.00

CW Acres Required: 39.2

Peak Flow (in/hr): 1.00

Settling Velocity (in/hr): 104.33

Detention Basins

% Existing: 2

% Future: 20

DB Acres: 6.8

Low Density Urban

Acres: 26,497

Constructed Wetlands

% Existing: 0

% Future: 5

Drainage Area/ Wetland (Acres): 10.00

CW Acres Required: 132.5

Peak Flow (in/hr): 1.00

Settling Velocity (in/hr): 104.33

Detention Basins

% Existing: 0

% Future: 4

DB Acres: 10.2

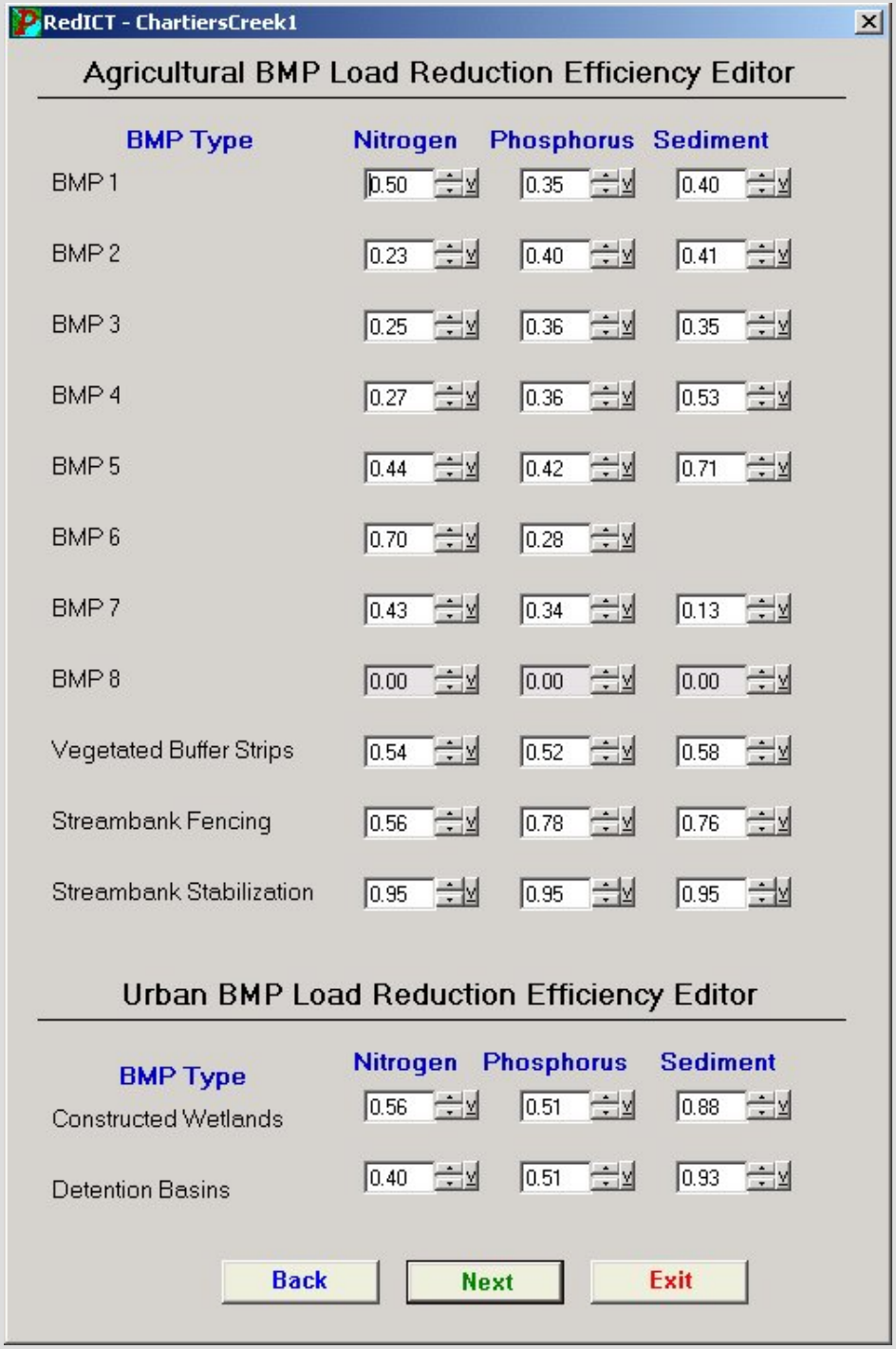
Vegetated Stream Buffers

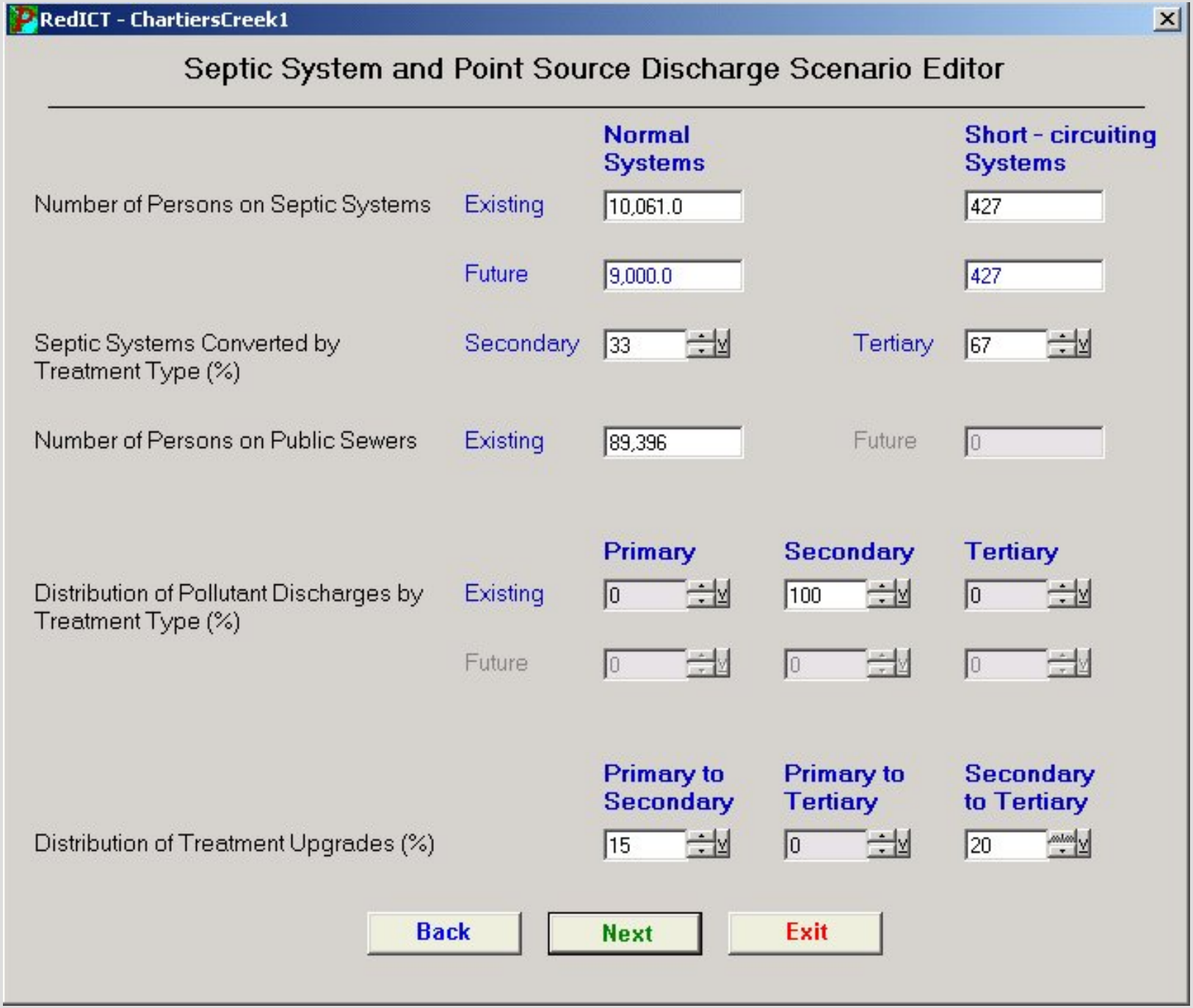
		Existing	Future
Stream miles in high density urban areas	85.8	0.0	0.4
Stream miles in low density urban areas	12.9	0.0	0.5

Stream miles in high density urban areas w/buffers

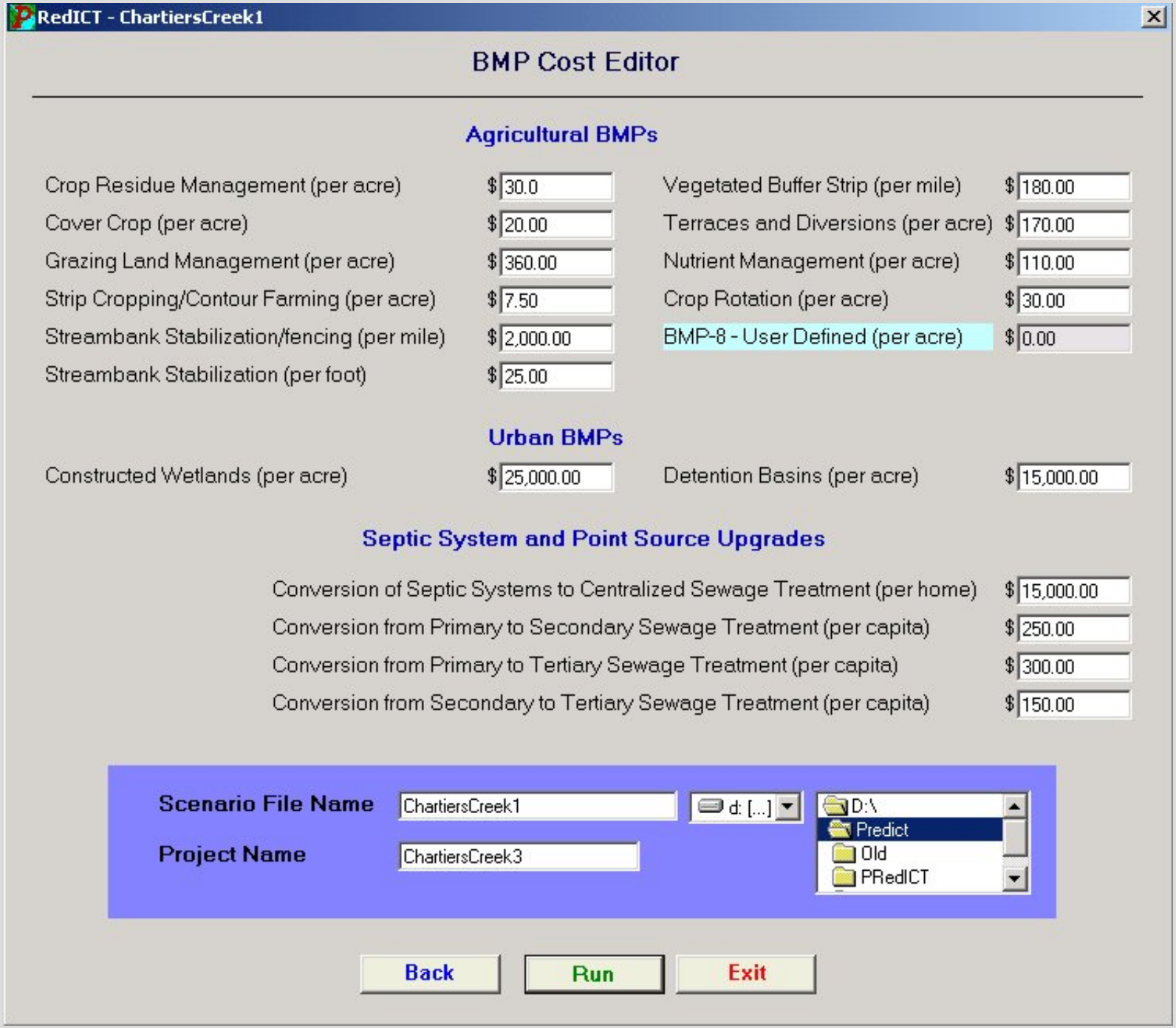
Stream miles in low density urban areas w/buffers

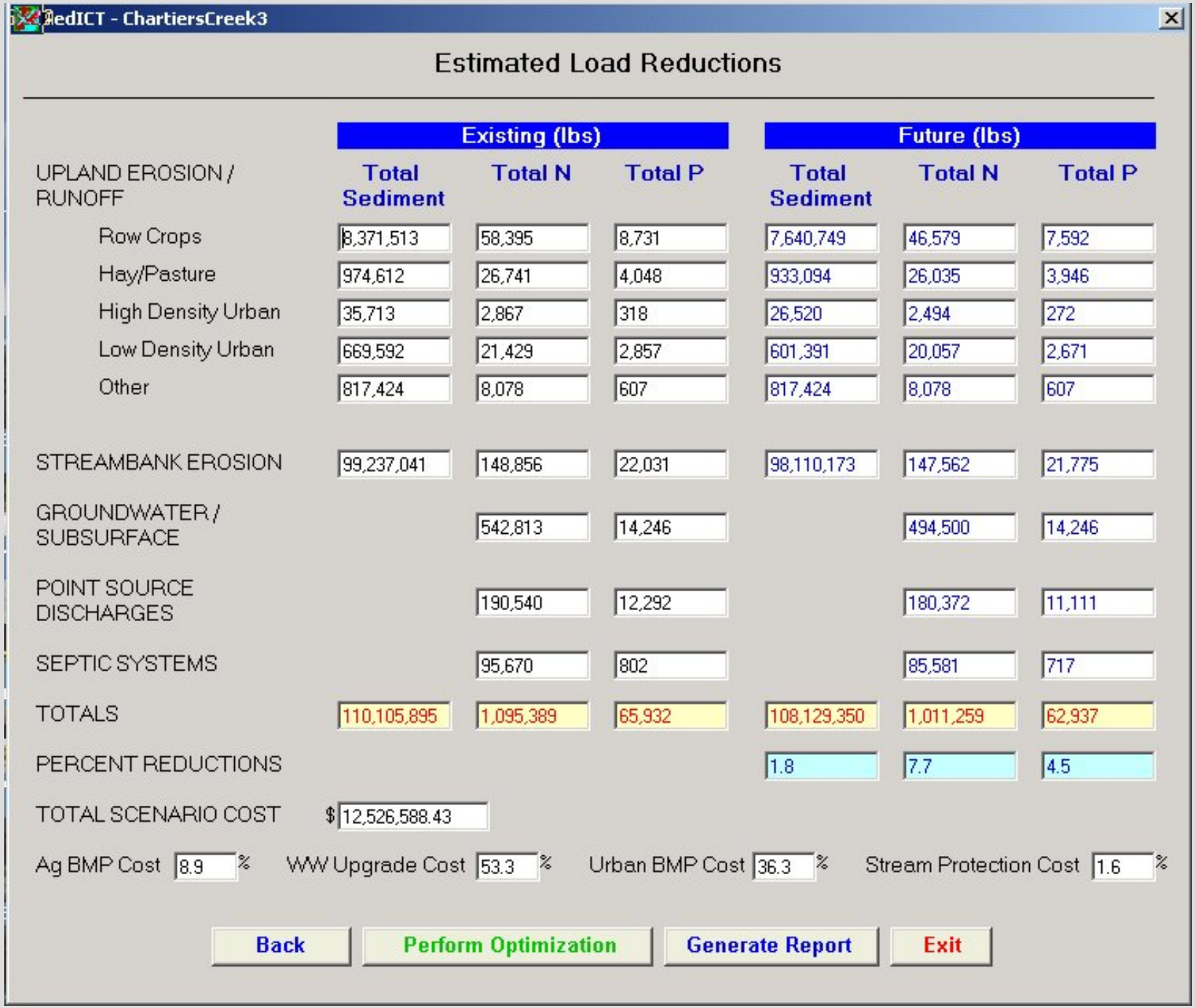
Back | Next | Exit


RedICT - ChartiersCreek1
Agricultural BMP Load Reduction Efficiency Editor
BMP Type
Nitrogen
Phosphorus
Sediment
BMP 1
0.50
0.35
0.40
BMP 2
0.23
0.40
0.41
BMP 3
0.25
0.36
0.35
BMP 4
0.27
0.36
0.53
BMP 5
0.44
0.42
0.71
BMP 6
0.70
0.28
BMP 7
0.43
0.34
0.13
BMP 8
0.00
0.00
0.00
Vegetated Buffer Strips
0.54
0.52
0.58
Streambank Fencing
0.56
0.78
0.76
Streambank Stabilization
0.95
0.95
0.95
Urban BMP Load Reduction Efficiency Editor
BMP Type
Nitrogen
Phosphorus
Sediment
Constructed Wetlands
0.56
0.51
0.88
Detention Basins
0.40
0.51
0.93
Back
Next
Exit


RedICT - ChartiersCreek1
Septic System and Point Source Discharge Scenario Editor
Normal Systems
Short - circuiting Systems
Number of Persons on Septic Systems
Existing
10,061.0
427
Future
9,000.0
427
Septic Systems Converted by Treatment Type (%)
Secondary
33
Tertiary
67
Number of Persons on Public Sewers
Existing
89,396
Future
0
Primary
Secondary
Tertiary
Distribution of Pollutant Discharges by Treatment Type (%)
Existing
0
100
0
Future
0
0
0
Primary to Secondary
Primary to Tertiary
Secondary to Tertiary
Distribution of Treatment Upgrades (%)
15
0
20
Back
Next
Exit


RedICT - ChartiersCreek1
Wastewater Discharge BMP Reduction Efficiency Editor
Nitrogen
Phosphorus
Conversion of Septic System to Secondary Treatment Plant
0.14
0.10
Conversion of Septic System to Tertiary Treatment Plant
0.56
0.60
Conversion of Primary Treatment to Secondary Treatment
0.14
0.10
Conversion of Primary Treatment to Tertiary Treatment
0.56
0.60
Conversion of Secondary Treatment to Tertiary Treatment
0.42
0.50
Back
Next
Exit


RedICT - ChartiersCreek1
BMP Cost Editor
Agricultural BMPs
Crop Residue Management (per acre) $ 30.0
Cover Crop (per acre) $ 20.00
Grazing Land Management (per acre) $ 360.00
Strip Cropping/Contour Farming (per acre) $ 7.50
Streambank Stabilization/fencing (per mile) $ 2,000.00
Streambank Stabilization (per foot) $ 25.00
Vegetated Buffer Strip (per mile) $ 180.00
Terraces and Diversions (per acre) $ 170.00
Nutrient Management (per acre) $ 110.00
Crop Rotation (per acre) $ 30.00
BMP-8 - User Defined (per acre) $ 0.00
Urban BMPs
Constructed Wetlands (per acre) $ 25,000.00
Detention Basins (per acre) $ 15,000.00
Septic System and Point Source Upgrades
Conversion of Septic Systems to Centralized Sewage Treatment (per home) $ 15,000.00
Conversion from Primary to Secondary Sewage Treatment (per capita) $ 250.00
Conversion from Primary to Tertiary Sewage Treatment (per capita) $ 300.00
Conversion from Secondary to Tertiary Sewage Treatment (per capita) $ 150.00
Scenario File Name
ChartiersCreek1
d: [...]
D:\
Predict
Old
PRedICT
Project Name
ChartiersCreek3
Back
Run
Exit


edICT - ChartiersCreek3
Estimated Load Reductions
Existing (lbs)
Future (lbs)
UPLAND EROSION / RUNOFF
Total Sediment
Total N
Total P
Total Sediment
Total N
Total P
Row Crops
8,371,513
58,395
8,731
7,640,749
46,579
7,592
Hay/Pasture
974,612
26,741
4,048
933,094
26,035
3,946
High Density Urban
35,713
2,867
318
26,520
2,494
272
Low Density Urban
669,592
21,429
2,857
601,391
20,057
2,671
Other
817,424
8,078
607
817,424
8,078
607
STREAMBANK EROSION
99,237,041
148,856
22,031
98,110,173
147,562
21,775
GROUNDWATER / SUBSURFACE
542,813
14,246
494,500
14,246
POINT SOURCE DISCHARGES
190,540
12,292
180,372
11,111
SEPTIC SYSTEMS
95,670
802
85,581
717
TOTALS
110,105,895
1,095,389
65,932
108,129,350
1,011,259
62,937
PERCENT REDUCTIONS
1.8
7.7
4.5
TOTAL SCENARIO COST
$ 12,526,588.43
Ag BMP Cost
8.9
%
WW Upgrade Cost
53.3
%
Urban BMP Cost
36.3
%
Stream Protection Cost
1.6
%
Back
Perform Optimization
Generate Report
Exit

Linkage with AVGWLF and PRedICT

- *Pass data from AVNPSTool to AVGWLF watershed model for more accurate calculation of nutrient and sediment loads.*
- *Pass data to PRedICT for more accurate representation of BMPs and other in-place pollution mitigation activities.*

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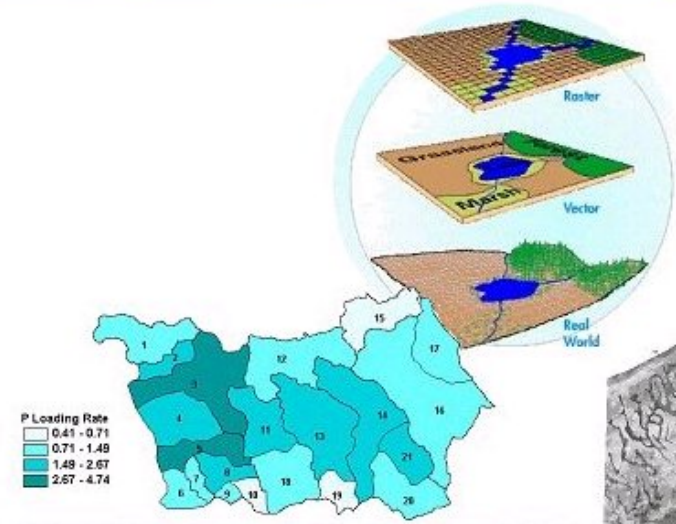

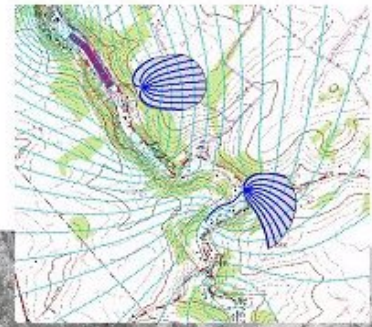

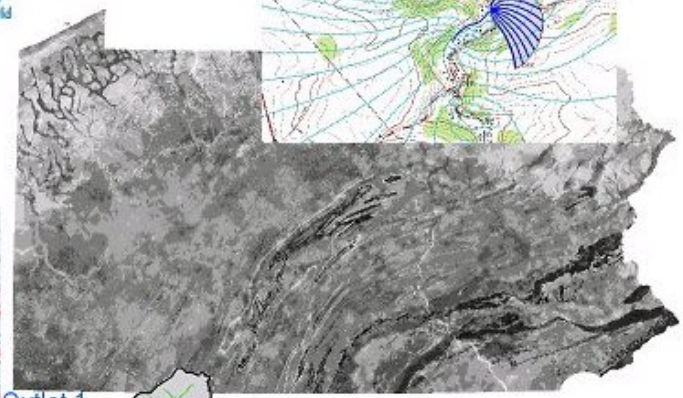

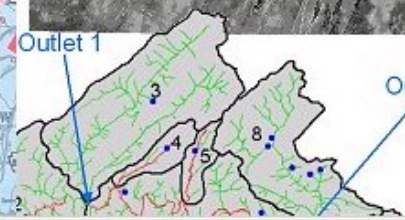

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